

STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:

California Energy Commission)
Workshop on Outdoor Lighting)
Standards Ideas)
)

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

WEDNESDAY, MARCH 27, 2002

10:05 A.M.

Reported by:
Peter Petty
Contract No. 150-01-005

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

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P R O C E E D I N G S

10:05 a.m.

CEC PROJECT LEAD FLAMM: My name is Gary Flamm. I am the project lead on the Senate Bill 5X, Outdoor Lighting Standards.

The purpose of today's workshop is for the project team to propose, to present our proposed measures and to obtain public comment. There is a sign-in sheet out front. I ask that everybody please sign in, and if you have a business card, in lieu of signing in, just please staple a business card to the sign-in sheet.

There are copies of all of the measures that were formally submitted as well a copy of the measures that the Energy Commission will be presenting today. It's my understanding, I didn't see anybody here from our web department yet, but this is supposed to be webcast, so there is supposed to be somebody from New York who has called me and someone from Cincinnati, so I want to say hi to them, and welcome to everybody that's on the webcast.

And I'd like to ask, we will have two Commissioners here today -- Commissioner Art Rosenfeld is here right now and Commissioner

1 Pernell should be able to make it in a little
2 later -- and ask Commissioner Rosenfeld if he has
3 anything to say right now.

4 COMMISSIONER ROSENFELD: Welcome.
5 That's it.

6 (Laughter.)

7 CEC PROJECT LEAD FLAMM: Okay. Now, we
8 have an agenda, and we're going to try to follow
9 that agenda. We're going to go over the various
10 elements after each presentation by the project
11 team. Those who made formal presentations to the
12 Commission or formal proposals will have various
13 opportunities to present those, along with what
14 we're presenting. And then we'll have a time for
15 questions and answers after each one of those
16 segments.

17 After this meeting the project team is
18 going to discuss what we learned today. We're
19 going to evaluate the various proposals, and we're
20 going to select those ideas that fit into the
21 scope of the project and the budget. We're going
22 to develop lighting models, do the lighting power
23 densities. We're going to be doing a life cycle
24 cost analysis, cost effectiveness on each of the
25 measures that we're pursuing.

1 Those reports will be on our web
2 sometime in mid- or early, early to mid-May, and
3 we're anticipating another public workshop to go
4 over what we develop sometime at the end of May.
5 In July we hope to have the draft standards
6 developed, and we hope to be on a parallel path
7 with our current 2003-2005 Title 24, Building
8 Energy Standards.

9 So then that's when the public process
10 will be started. And I would ask if Bill
11 Pennington or Mazi have anything to add to that.

12 CEC STAFF PENNINGTON: I don't. I'd
13 like to welcome you as well. I think this is a
14 potentially exciting area for us to be getting
15 into, and it's brand new, and so a lot of
16 potential places to trip up. So we're going to
17 need people's input. So welcome.

18 CEC STAFF SHIRAKH: I just wanted to
19 echo what Gary and Bill have said. This is a new
20 area, we're breaking new ground, and there are
21 going to be lots of challenges. So I'm glad there
22 is a good turnout here, we can use as much input
23 as we can get.

24 The schedule is pretty aggressive.
25 We're going to have draft standard by July, which

1 is a little over four months. So we'll try our
2 best. Thanks.

3 CEC PROJECT LEAD FLAMM: Can I have the
4 first slide, please? Okay, and that's what I just
5 did. Next slide, please. No, not the slide, the
6 original slide show, the overview.

7 CONSULTANT ELEY: That's it there.

8 CEC PROJECT LEAD FLAMM: Right. The one
9 before that, I just wanted to -- there was a list
10 of the project team and I just wanted to pull that
11 up to introduce the project team.

12 Let me just go around the table real
13 quick and have the project team introduce
14 themselves. Again, my name is Gary Flamm and I am
15 the project lead on this.

16 CEC STAFF SHIRAKH: I'm Mazi Shirakh.
17 I'm a mechanical engineer with the Commission.
18 I'm a member of both the outdoor lighting and the
19 building standard projects.

20 CEC STAFF PENNINGTON: Bill Pennington,
21 I'm the project manager for Building Standards
22 Development in general at the Energy Commission,
23 and I'm responsible for the 2005 building
24 standards project that this outdoor lighting
25 proposal will fit into.

1 CONSULTANT ELEY: And my name is Charles
2 Eley. I'm with Eley Associates and we're the
3 primary contractor on this project, the prime
4 contractor.

5 CONSULTANT AYERS: My name is Larry
6 Ayers and I work with Charles Eley Associates.

7 CONSULTANT BENYA: My name is Jim Benya
8 with Benya Lighting Design. We're a subcontractor
9 of Eley Associates and responsible for developing
10 a number of measure proposals, and later to help
11 prepare models and other things in support of the
12 proposed standards.

13 CONSULTANT HESCHONG: I'm Lisa Heschong
14 of the Heschong Mahone Group. I am another
15 consultant and subcontractor to Eley Associates.
16 We will be working on the proposals and the
17 research to support it.

18 CEC PROJECT LEAD FLAMM: Okay. There
19 are a couple of other speakers. We'll have them
20 introduce themselves when they come up.

21 If anybody wants to make comments, we're
22 going to have particular periods in the agenda, a
23 time for you to come up. And for the recorder,
24 every time you speak we ask you to state your
25 name. So after you're recognized, please come up

1 to the lectern, say who you are so that we can
2 record that, and then state your issues, your
3 message at that time.

4 There are two additional people to the
5 project team that are not here. That's Roger
6 Wright with RLW Analytics, and Nancy Clanton, and
7 I'm not sure of the name of her business, Nancy
8 Clanton --

9 CONSULTANT ELEY: Clanton Associates.

10 CEC PROJECT LEAD FLAMM: -- Clanton
11 Associates. So that's our whole project team.

12 Now I'd like to turn it over to Charles
13 Eley to give us an overview.

14 CONSULTANT ELEY: Outdoor lighting is a
15 big contributor to the electricity problem in
16 California. It contributes to both the
17 electricity consumption and to the peak. And it's
18 also highly related to a number of other social
19 and environmental impacts, such as light trespass
20 and light pollution.

21 Light trespass and light pollution have
22 been identified in the Advanced Lighting
23 Guidelines, which is available from
24 NewBuildings.org. This was a project funded by
25 the California Energy Commission and others.

1 Our main goal here is to conserve energy
2 and to reduce electric peak demand. There are
3 other benefits of this project, such as improving
4 quality of outdoor lighting, and reducing the
5 impacts of outdoor lighting. And to also provide
6 lessons on good outdoor lighting, reducing light
7 trespass, pollution and so forth. But our primary
8 goal is to conserve energy and to reduce peak
9 demand. And this is kind of keyed right back to
10 the statute and the authority of the California
11 Energy Commission and the enabling legislation.

12 Senate Bill 5X changed the political
13 grounds in California by giving the Energy
14 Commission the authority to adopt energy
15 efficiency standards for outdoor lighting. The
16 authority was unclear before 5X, but now it's very
17 clear. And so it's the -- The purpose of this
18 project is to adopt outdoor lighting standards and
19 to include these standards as a part of the Title
20 24 Part Six regulations that are triggered by new
21 building constructions.

22 There are some other parts of this
23 project that may actually go beyond the Title 24
24 standards, and I'll return to those in a minute.

25 At present, the California standards

1 apply to outdoor lighting in just a very limited
2 way. There is a requirement that lamps larger
3 than 100 watts have an efficacy greater than 60
4 lumens per watt. This in effect eliminates
5 incandescent or mercury vapor lamps that are
6 larger, or smaller, excuse me -- that are larger
7 than 100 watts. Sodium lighting and full-size
8 compact, or full-size fluorescent lighting would,
9 of course, have an efficacy greater than 60 lumens
10 per watt and could be used.

11 The standards also require that outdoor
12 lighting be controlled by either a photocell or a
13 time clock or a combination of the two, and that's
14 about it right now for how outdoor lighting is
15 currently regulated in the standards. We might
16 note that, in terms of the statute, unconditioned
17 buildings are considered outdoor spaces, I
18 suppose, so, therefore, there are no lighting
19 power density requirements for unconditioned
20 spaces. So a warehouse that's heated has to meet
21 a lighting power density requirement, but a
22 warehouse next door that's not heated does not
23 have to meet the lighting power density
24 requirement.

25 So one of the things that we're doing

1 under this project is extending the lighting power
2 density requirements to all buildings, whether
3 they're conditioned or unconditioned.

4 ASHRAE Standard 90.1-1989 is the basis
5 of the federal standards and the standards in many
6 states, and this standard does include some
7 additional requirements for outdoor lighting that
8 are not in Title 24. ASHRAE '89 has lighting
9 power densities for parking lots, building
10 facades, buildings and grounds, entrances and
11 exits and so forth.

12 Many of those requirements continued
13 into, with the exception of parking lots, parking
14 lots and buildings and grounds were dropped, but
15 entrances and exits continued into the '99 version
16 of ASHRAE 90.1. So there is some precedent among
17 other standards and in other states for regulating
18 outdoor lighting.

19 The purpose of this meeting today is to
20 bring forward some ideas for consideration, and
21 these are the topics that we're looking at right
22 now. Following this workshop today we will make a
23 decision based on your input and other factors
24 about which of these to move forward on.

25 They include unconditioned buildings,

1 and this is a pretty straightforward extension of
2 the standard for conditioned buildings. I think
3 all of us would probably agree that the lighting
4 power density for an unconditioned warehouse
5 should probably be the same as the lighting power
6 density for a conditioned warehouse. In terms of
7 the lighting environment, there is no difference.

8 We're also looking at a standard for
9 parking lot lighting, for buildings and grounds
10 lighting. This would be the walkways and
11 landscaped areas around buildings. We're looking
12 at a standard for around building entrances and
13 exits and around building facades. Now, those
14 first five are -- we're not really breaking a lot
15 of new ground there. You know, there are existing
16 standards in other places, but we hope to take a
17 fresh look and to come up with a solid basis. But
18 there are precedents there.

19 The last four topics are new ground.
20 One of them is lighting under exterior canopies.
21 The best example of this is service station
22 canopies, but there are other examples as well of
23 point-of-use canopies, point-of-sale canopies.

24 Another area which we are proposing to
25 develop a standard for is outdoor sales lighting.

1 This would include car lots, garden centers, and
2 any other type of outdoor sales area space. So
3 that, down through outdoor sales lighting, we
4 expect that we can include all of these standards
5 in Title 24, in Part Six of Title 24. They would
6 be -- The trigger for the regulation would be the
7 application of the building permit, application
8 for a building permit, just like all the other
9 Title 24 standards.

10 There are two other topics that we're
11 researching. They're the last two on the list
12 here. One of them is billboard and outdoor
13 signage. And then finally, public right of way
14 lighting. Public right of way lighting would
15 include -- I mean, here what we would -- the
16 decisions made about public right of way lighting
17 are typically made by the public works departments
18 in cities and counties, they're by CALTRANS and by
19 public agencies. And it's not clear to us that
20 building permits are needed to erect a sign
21 either.

22 So these last two we don't really see at
23 this point being implemented as part of Title 24,
24 but what we're suggesting to do here is to develop
25 a standard for billboards and public right of way

1 lighting that we would -- and we would promote the
2 use of this standard with cities and counties and
3 with CALTRANS. So it's not clear that we can
4 regulate those standards through the building
5 permit process.

6 So that's an introduction to the project
7 as a whole. I think we've got a terrific team
8 involved here. Jim Benya and Nancy Clanton and
9 Lisa Heschong and Larry Ayers are doing most of
10 the research. Roger Wright's role on this project
11 will be to help us assess the impact of this
12 project once the standards begin to take a little
13 more form.

14 And with that, I will hand the agenda
15 back to you, Gary.

16 CEC PROJECT LEAD FLAMM: Okay, thank
17 you.

18 There will be opportunities after each
19 measure is discussed for Q and A. I did not put
20 any Q and A at this point; however, are there any
21 questions not relating to the rest of the agenda
22 at this point that anybody has?

23 COMMISSIONER ROSENFELD: I have a simple
24 question. Is there a copy of your slides,
25 Charles?

1 CONSULTANT ELEY: Excuse me?

2 COMMISSIONER ROSENFELD: Is there a copy
3 of your slides outside?

4 CONSULTANT ELEY: Oh, they're not
5 outside, but we'll put them on the Energy
6 Commission web site.

7 COMMISSIONER ROSENFELD: Good, okay.

8 CONSULTANT ELEY: Do you know if there
9 are copies around?

10 CEC PROJECT LEAD FLAMM: I have not made
11 any copies of slides. I did make copies of all
12 the proposed measures. We can have the slides on
13 the web site for people.

14 Okay. I want to then go into our
15 presentation on environmental zones, and I'll ask
16 Lisa Heschong to do that for us.

17 CONSULTANT HESCHONG: Okay. In addition
18 to the specific measures that Charles just
19 reviewed, there are two rather innovative and
20 cross-cutting proposals that the CEC team is
21 pursuing in terms of defining this new set of
22 regulations for outdoor lighting. I'm going to
23 talk about the concept of environmental zones, and
24 then Jim Benya is going to talk about the
25 methodology that we are considering using to

1 define illumination criteria for these different
2 specific tasks and applications of outdoor
3 lighting.

4 The environmental zone was first
5 proposed by the CIE, which is an international
6 illumination society. It is in the process of
7 being adopted by the IES of North America, which
8 is the Illuminating Engineering Society of North
9 America, sort of the two international bodies that
10 develop standards for all sources of illumination.

11 The proposed environmental zones would
12 define four levels of illumination criteria that
13 basically become geographic territories. And the
14 concept is that there are different environmental
15 sensitivities. Although lighting is provided for
16 human uses, there are other environmental uses,
17 there are other species that are affected by
18 light. And they should be considered in
19 relationship to outdoor lighting criteria.

20 And also, that there are different
21 levels of needs for outdoor lighting that are
22 primarily territorial. So these four zones, I'll
23 talk about the first one. The first one, which is
24 referred to as E1, is talked about as a territory
25 of intrinsically dark landscapes. We have not nor

1 have any of these international illumination
2 agencies gotten to the point of specifically
3 defining these zones. So at this point they are
4 talked about rather generally.

5 Intrinsically dark landscapes are places
6 where you would go out at night and be able to see
7 the stars, see the Milky Way, and where there is
8 the most need to protect the environment from
9 light trespass and light pollution for various
10 reasons, or simply for the aesthetic appreciation
11 of the sky at night in its natural condition.

12 Therefore, where would E1 apply?

13 Logically, it would apply to areas that have been
14 defined as natural preserves. These might include
15 national parks, they might include state parks,
16 they might include nature conservation areas,
17 areas that have been defined as having endangered
18 species, especially nocturnal endangered species.
19 They also may include areas in California that
20 have been legally defined as having particular
21 environmental sensitivities, such as the coastal
22 zone. The California Coastal Commission has some
23 definitions of rural coastal areas where they
24 provide a higher level of scrutiny on development
25 projects than they do in developed coastal areas.

1 In pursuing this concept of
2 environmental zones, our research will be looking
3 at understanding legal definitions within the
4 state of California that define specific
5 territories, geographic areas that may have a
6 relationship to environmental zone. And where
7 there is a state interest in protecting an
8 intrinsically dark landscape at night.

9 The proposed E2 would be areas of low
10 ambient brightness. They don't need extreme
11 protection for completely dark nights, but they're
12 areas where there is reasonable reason to pursue
13 low ambient brightness. And this would basically
14 become a simpler minimal standard for outdoor
15 illumination at night.

16 Moving on to zone three, E3 is talked
17 about as an area of medium ambient brightness, and
18 then logically you would follow that E4, the
19 highest level, are areas of the highest level of
20 ambient brightness.

21 Now, it's important to understand that
22 these zones being geographical areas are not tied
23 to building uses. It doesn't necessarily mean
24 residential versus commercial or industrial. You
25 very easily can have a commercial or an industrial

1 use which might occur in an E2 or an E3 area.

2 The people who have been talking about
3 these zones tend to visualize E4 as Manhattan, for
4 example. It's the area of the highest level of
5 human usage, where there is activity going on
6 almost 24 hours a day, and where you really need
7 and desire a higher level of illumination
8 throughout the nighttime hours. And so then
9 there's this gradient between E1, which is
10 protected, dark areas, up to E4, with the highest
11 level of use.

12 And part of our task in defining these
13 will be to understand how they can be defined
14 legally geographically, how to create a system
15 that will be flexible and responsive to
16 development needs, and that will respond to
17 changing perceptions of whether a specific area
18 should be considered an intrinsically dark area or
19 an area of very high ambient illumination.

20 These environmental zones are being
21 conceived as being tied to at least two and maybe
22 three of the criteria that will be developed for
23 the specific applications. One of these criteria
24 is time of use, and is being talked about
25 generically as a curfew period.

1 At this point we are tentatively
2 considering looking at three time periods during
3 the day for the regulation of outdoor lighting.
4 One time period would likely be daytime, from
5 sunrise to sunset, when there is sufficient
6 daylight illumination that outdoor lighting
7 becomes superfluous or certainly secondary to the
8 daylight.

9 A second period would be what is being
10 called a curfew period, which would have the most
11 stringent requirements. In California by the
12 governor's edict we currently do have a curfew
13 period where billboards are turned off, where
14 outdoor parking is turned out, where excessive
15 lighting is turned off. This would be the time of
16 the night when there is the least human activity.
17 How it gets defined may become a statewide level
18 or it may be pushed down to the local level. You
19 could have a local definition of curfew.

20 Various definitions that have been
21 proposed have been an hour after business closing
22 time, 11:00 o'clock at night, midnight, so many
23 hours after sunset. There are different ways to
24 define that time period.

25 The third time period then becomes the

1 time in between curfew and daytime. And so this
2 may be a variable period, from dusk, sunset, when
3 we begin to turn on outdoor lights, to when curfew
4 starts at night, and then again, in that period,
5 in-between period in the early morning hours
6 between the end of curfew and when there is
7 sufficient light after dawn that we can start to
8 turn off outdoor lighting applications.

9 So right now what we're looking at is a
10 definition of these three time periods, and each
11 set of applications would tie a set of
12 requirements for these three, maybe four time
13 periods, by environmental zone, so that
14 requirements for curfew could vary by
15 environmental zone and vary by application.

16 Well, let me interject here another two
17 issues, going back to I said there were three
18 possible criteria that would be applied by
19 environmental zone. In addition to curfew, the
20 other is illumination levels, most likely
21 controlled by a lighting power density criteria.
22 And Jim is going to talk about how those lighting
23 power density criteria would be established
24 relative to illumination criteria, but that there
25 would be a difference of criteria for how much

1 light, the density of light that you need, by
2 environmental zone and, again, by application
3 type.

4 The third possible set of requirements
5 that might vary by application zone are equipment
6 standards, which might include such things as
7 definition of cutoff, on how much light is allowed
8 to escape from the fixture at different angles, or
9 what kind of distribution of light is required
10 from specific equipment types.

11 Again, with curfew tying into the time
12 zone, the other equipment requirement that might
13 vary are lighting control equipment requirements,
14 and specific requirements for astrological clocks,
15 time clocks, photosensors, occupancy sensors and
16 so on, equipment requirements that could vary by
17 environmental zone. So those are the three types
18 of requirements that are being considered varying
19 by environmental zone.

20 The next question that comes up is how
21 might these environmental zones be defined legally
22 and tied to geographic areas? One proposal that
23 has been put forward is that the state would
24 establish a set of defaults for these
25 environmental zones. And that then local

1 jurisdictions, local regulation agencies would
2 have the option to tailor that at a much finer
3 grain detail relative to their specific needs.

4 So in the absence of a local
5 jurisdiction specifying a specific environmental
6 zone for their areas, the state defaults would
7 apply. There are sort of two levels of state
8 defaults that are currently under discussion among
9 the group. One would say that the state would
10 define a set of defaults for environmental zone
11 one that would be tied to legal definitions of
12 parks, conservation zones, environmental zones.

13 And that there would be a second default
14 for everything that is not E1, by default would
15 then become E2, which would be the lowest level
16 for general use illumination. And then the local
17 jurisdictions would have the option to specify
18 specific areas, presumably within their zoning
19 regulations, that tie to E3 or E4 so that they can
20 tailor this to more specific needs.

21 An alternate approach would be to tie
22 the defaults for E2 and E3 to current population
23 densities that have been reported, most likely by
24 the US Census, and so that we could look at
25 population densities of metropolitan areas -- for

1 example, of less than 440,000 people -- would
2 become an E2 zone, and everything above a certain
3 cutoff point which has been floated at 40,000 or a
4 density of people per square feet in habitation
5 would then become E3.

6 One of the questions with this approach
7 is how fine-grained is it. Is it at the standard
8 metropolitan district definition? Is it at the
9 census tract level? Is it at the zip code level?
10 Is it at the block or tract level? There are many
11 possible variations in how fine-grained detail
12 these definitions become. And then, again, E4
13 would be available for local jurisdictions to
14 specifically designate as a higher intensity of
15 light use for their needs, their population.

16 I think that pretty much covers it. Is
17 there another slide? I've already mentioned that
18 the zones require a geographic area. The other
19 thing that's very clear is that any property owner
20 or anybody considering purchasing a piece of
21 property needs to be able to identify which
22 environmental zone applies. And so that it would
23 be very straightforward, either going to your
24 local jurisdiction, your building department or
25 city planning agency to get a document that maps

1 out environmental zones for that region into
2 specific properties or the defaults at a state
3 level, so that you could tell very immediately.

4 In addition, it's likely that we may
5 have to work out rules of precedence for which
6 local jurisdiction has the jurisdiction over
7 environmental zone; for instance, if you have a
8 city planning board you may have a regional park
9 district, you may have CALTRANS controlling access
10 on state and federal highways through those areas.
11 So there needs to be a hierarchy of precedent for
12 which local jurisdiction controls specific areas,
13 and we will be looking at that also.

14 Another very important piece of our
15 research will be looking through all the other
16 agencies in California, and understanding how they
17 define territories and how their specific
18 geographic designations may interface with this
19 concept of environmental zones where the
20 California Energy Commission is concerned, and
21 whatever legal overlap there may be between those
22 different designations.

23 I think that's the last slide. One
24 more?

25 CONSULTANT ELEY: That's it.

1 CONSULTANT HESCHONG: That's it. So,
2 with that, we can open it to questions and
3 answers, Gary.

4 CEC PROJECT LEAD FLAMM: Well, before I
5 open it to Q and A, I want to see if anyone else
6 on the project team would like to elaborate.
7 Bill, do you have something to say?

8 CEC STAFF PENNINGTON: I have a question
9 and an issue that I'm concerned about. First off,
10 the question, could you explain why environmental
11 zones are relevant to setting an energy standard?
12 What's the energy consequence of the environmental
13 zone?

14 CONSULTANT HESCHONG: The energy
15 consequence of the environmental zone is
16 appropriate illumination level, and, therefore,
17 appropriate energy use. If we set an energy code
18 for the highest conceivable energy use, the
19 highest intensity lighting needs for an area, we
20 would be setting energy requirements based on
21 essentially environmental zone four. Because
22 every property owner has the potential to have
23 that highest level of need.

24 But that doesn't reflect the impacts on
25 all of the neighbors of that property owner, and

1 it also doesn't reflect the understanding in the
2 illumination community that when you are adapted
3 to darkness at night, you don't need those highest
4 levels of illumination. And this is what Jim is
5 going to talk about in his presentation, the
6 concept of adaptation levels.

7 If you are traveling through Yosemite
8 National Park and there has not been an outdoor
9 light anywhere, you can -- your eye is adapted to
10 a much lower level and you can see and perform
11 tasks successfully at very low illumination
12 levels. If, however, you have been walking down
13 Market Street in downtown San Francisco and under
14 a hundred footcandles, your eye is adapted to a
15 much higher level. In order to see a task, in
16 order to perceive a sign, you need a higher level
17 of illumination.

18 So what the environmental zones is try
19 to tailor energy efficiency requirements to
20 appropriate adaptation levels and environmental
21 zones so that we don't overdo it by allowing for
22 the worst possible case in every situation.

23 CEC STAFF PENNINGTON: One of the issues
24 that is on my mind related to defining
25 environmental zones is the possibility of having

1 local governments be who defines them. And
2 particularly in the case where the local
3 government would be defining the zone that is
4 allowed the highest energy use, that's a little
5 bit counter to the way the building code normally
6 works, with a state building code establishing
7 sort of the highest amount of something that you
8 can do, and then having a local government having
9 the option of setting a standard that's more
10 stringent than that or, in terms of energy use,
11 more energy efficient than that.

12 CONSULTANT HESCHONG: Well, I think a
13 very good parallel in Title 24 would be the
14 concept of the tailored lighting allowance. In
15 the building lighting allowances we have three
16 ways to calculate illumination levels: whole
17 building, area, or tailored. And we also have use
18 it or lose it allowances, where the building owner
19 essentially, through their design team, can make
20 justifications for higher levels of use because of
21 specific tasks.

22 This is essentially doing the same
23 thing, but at the local jurisdiction level instead
24 of at the building owner level.

25 CEC STAFF PENNINGTON: Yeah, my reaction

1 to that example, that might be an interesting
2 example, is that we're pretty careful about how to
3 define the framework under which someone can
4 choose a task within, a tailored lighting task.
5 And that might drive us in this situation if we
6 were to do it the way you describe it, having a
7 fairly specific criteria for what would be
8 acceptable within that E4; that would be a
9 framework within which a local government could
10 decide. That seems plausible to me.

11 CONSULTANT HESCHONG: Mm-hmm.

12 CEC STAFF PENNINGTON: Okay, thank you.

13 CEC STAFF SHIRAKH: There's one note on
14 the microphone --

15 CEC PROJECT LEAD FLAMM: Would you say
16 your name.

17 CEC STAFF SHIRAKH: This is Mazi
18 Shirakh. There are two mics here. The long one
19 is used for the recorder, the short one is the one
20 that amplifies the sound here and also is tied to
21 our webcast, so --

22 CEC PROJECT LEAD FLAMM: No, the long
23 one is ours, the short one is the recorder's.

24 CEC STAFF SHIRAKH: So, you know, when
25 you talk, make sure that you talk into both mics.

1 CONSULTANT HESCHONG: Yes, sir.

2 (Laughter.)

3 CEC PROJECT LEAD FLAMM: Okay. I'm
4 going to open it to questions and answers, please.
5 Come to the lectern and identify yourself and then
6 address us, please.

7 SPEAKER HOGAN: John Hogan, City of
8 Seattle. In Seattle and Washington state we've
9 been forcing outdoor lighting requirements as part
10 of our energy codes for 22 years, since 1980. And
11 based on that experience maybe would offer a
12 couple of observations and a questions for you,
13 Lisa.

14 We have requirements, for instance, for
15 parking lots and parking garages. It's been 0.2
16 watts a square foot, for instance, since 1991 in
17 Seattle. With these various zones that you have
18 here, this suggests an increasing complexity in a
19 certain way. One, now lighting designers, if they
20 want to go to design a parking lot, they can just
21 say, okay, it's a parking lot and look up the
22 value in the code, this is the value and I design
23 to that.

24 Now they would need to know something
25 about the zoning or -- you've mentioned the

1 environmental zones. It seems tricky how that
2 might be correlated with local land use zones.
3 Seattle has an arboretum within the city limits,
4 so I'm presuming that would fall within this E1
5 zone. We have downtown areas, E4, so within our
6 city it looks like we'd have the whole range, for
7 instance, if this were to apply to us.

8 So we'd need to figure out where the
9 boundaries were in all of these, and if you
10 imagine doing that in lots of different cities it
11 starts to sound more complicated, unless you can
12 say it's residential or base it on a height limit
13 or use some other surrogates for this. Even
14 within that, obviously, you have uses which are,
15 let's see, non-complying uses but have been
16 grandfathered over time, so maybe you've got a
17 warehouse that's in the zone that's supposed to be
18 residential, so it seems there is a lot of
19 complexity trying to do that.

20 It also seems there's a lot of
21 complexity to try and take parking lot lighting
22 and say maybe we've got four different categories
23 for this. So if you were to use these zones, are
24 these something which you see where there are
25 certain of these nine or ten categories that

1 Charles showed that would need four different
2 options, or do you see that there are only a few
3 of those categories that might have these four
4 different options?

5 So, for instance --

6 CONSULTANT ELEY: I think some of the
7 requirements, like building facade lighting, I
8 don't think we envision that being permitted,
9 except maybe E3 or E4, perhaps. So yeah, there
10 would be -- And parking lot lighting would, I
11 think we would envision a different watts per
12 square foot number --

13 SPEAKER HOGAN: For the different zones?

14 CONSULTANT ELEY: -- for the different
15 zones. I think it's going to vary, you know.
16 Some activities would not even be permitted.

17 CONSULTANT HESCHONG: And it may not
18 just be light and power density, you might have,
19 it might be a yes/no lighting power density, you
20 can light a facade or not, as Charles said. There
21 may be two levels of lighting power density for
22 the four zones. But also, the curfew requirements
23 may change, not affecting the design, but simply
24 the source of the controls.

25 So, for instance, an environmental zone

1 one and two, you might require that all lighting,
2 all parking lot lighting be completely turned off
3 during curfew, whereas in environmental zone three
4 and four, it's allowed to continue at a certain
5 percentage during the curfew period.

6 SPEAKER HOGAN: If you were to make that
7 distinction, I think that's helpful, separating
8 the designers from the operators. Because the
9 designer knows they have to install a set of
10 controls with astronomic control and a time clock,
11 and that's going to go in on every project, and
12 then you're talking about, well, do they have to
13 shut it off at 8:00 p.m. or 12:00 p.m. or, you
14 know, when does that happen.

15 And so it allows the designers to go
16 ahead and do their task without maybe knowing the
17 zone so much, but it's the people in the zone that
18 would know restrictions on operation.

19 CONSULTANT HESCHONG: One other thing
20 here and I'll let Jim come in, is that when you go
21 in for a building permit, you always know what
22 zone you are, what city zoning requirement you are
23 within the city. If you -- Because the city
24 zoning determines setback unit limits, it sets
25 height requirements, it sets allowed uses, that's

1 just standard procedure for any architect, anybody
2 submitting a set of building plans to understand
3 what the zoning requirements are for that
4 property.

5 SPEAKER HOGAN: You know, I guess I
6 would disagree, because for an architect that's
7 true, but people who get the permits for lighting
8 are just electrical. So you get a building
9 permit, you get a mechanical permit, you get an
10 electrical permit. We can have somebody coming in
11 three years after an office building was built and
12 they're going to put in two floors of office with
13 a cafeteria in the middle, and the lighting
14 designer knows they're doing the cafeteria. They
15 don't know whether that building was zoned for 240
16 feet or 120 feet, or, you know, all they need to
17 know is the space they're doing.

18 CONSULTANT HESCHONG: Well, I think
19 that's a really good point, that for the
20 electrical design community, the concept of zoning
21 may be new, and there may be an education process
22 that has to be involved or a sensitivity to their
23 permit process that we have to pay attention to.
24 That's certainly not the case with the building
25 construction industry in general, but for specific

1 lighting permits, that may be the case.

2 SPEAKER HOGAN: I would add, Charles I
3 think made some earlier comment about difficulties
4 doing, regulating billboard lighting and things
5 like that. Obviously, you need an electrical
6 permit. It doesn't seem that that's tied in to a
7 building permit, you can decide to put up a sign
8 five years after a building was put up or it's not
9 necessarily connected to a building permit at all.

10 So I think you can regulate that, and we
11 have both electrical permits and sign permits,
12 which people are required to take out.

13 CONSULTANT ELEY: Is signage regulated
14 in your building code?

15 SPEAKER HOGAN: Well, there's a separate
16 sign code. I wouldn't say it's regulated, it's
17 actually probably more closely tied to the land
18 use code in terms of whether you can put big,
19 bright signs in various neighborhoods, things like
20 that.

21 CONSULTANT BENYA: Jim Benya. John, one
22 very important thing, and excuse me if Lisa may
23 have mentioned this already, but I want to
24 reinforce it. The Illuminating Engineering
25 Society of North America board has voted that all

1 future IESNA outdoor lighting recommendations
2 shall be based on the four-environmental-zone
3 system, which means that any publication in
4 support that you pick up and receive and refer to
5 as an IES publication will be based on this
6 system.

7 Therefore, the illuminance levels that
8 will be recommended in those and the techniques
9 and things will be very consistent with this
10 program. That was an important breakthrough,
11 because personally -- Lisa talked about
12 Yosemite -- I actually developed the lighting
13 standards for the US Park Service for Yosemite.
14 And we took the IESNA recommendations for the
15 lowest light level that they dealt with at the
16 time and cut them in half for most of the
17 applications. And it's perfectly workable because
18 you have essentially an E1, or borderline in some
19 cases E2 zone there, by the proposal we have in
20 front of us.

21 So, you know, .2 footcandles is a lot of
22 light at a parking lot at Yosemite. And .2 would
23 be considered to be intrinsically dark at a
24 parking lot in Sacramento city proper. You know,
25 I think this is an absolutely necessary philosophy

1 as we try and improve outdoor lighting for all
2 reasons.

3 And if the IESNA standards are going to
4 come out that way, it seems logical that the
5 Energy Code, Title 24, and eventually ASHRAE IES
6 90.1 would also adopt the same environmental zones
7 so that everything matched.

8 SPEAKER HOGAN: But it would be easier
9 to make sure it matched if IES actually provided
10 fairly succinct definitions of what that was so
11 that it wouldn't be necessary for local
12 jurisdictions to make a lot of decisions.

13 CONSULTANT BENYA: Well, the problem
14 that you have, and I think you made a really good
15 point with Seattle, we've talked about this
16 considerably, the issues that a city could have
17 everything from E1 to E4 in the city. And the
18 corollary to that is that it does give the
19 municipality a certain level of control over its
20 own environment. And you can decide at the city
21 council level or whatever what is appropriate,
22 given certain neighborhoods, zones, districts, and
23 so on in the city.

24 And I think if you'll stand back and you
25 look at it from that perspective, it actually is a

1 very good idea. Because you can take your
2 arboretum and say it's an E1, and you won't have,
3 you know, people putting up floodlights in sports
4 fields right next to it. And, conversely, you
5 know, in the E4 downtown areas and sports areas
6 and things like that, there is going to be a
7 certain permissible amount of light that in other
8 zones we'd consider to be just pure waste, but
9 it's a necessary outcome of, let's say, sports
10 field lighting or something, particularly at the
11 professional level. And there will be different
12 rules, I believe, for different uses.

13 Some of the rules will not be energy
14 rules. The whole concept of Title 24 taking this
15 on is to begin the process. But I see an
16 additional set of rules. Every municipality in
17 the nation in addition to California probably has
18 some sort of light nuisance law of some kind.
19 Many of them are very prescriptive: they require
20 certain footcandle levels and so on.

21 We see this whole system working to the
22 advantage of getting this all together under a
23 very common set of standards, and I think
24 environmental zones are fundamental to making that
25 work.

1 CEC PROJECT LEAD FLAMM: Yes.

2 CALBO REP TRIMBERGER: I'm Tom

3 Trimberger, representing California Building
4 Officials. This is an enormous step beyond what
5 the Commission has been charged to do in the past.
6 I'm a little concerned talking about defining
7 environmental zones according to requirements of
8 other species. I'd hate to see somebody get into
9 CEQA, the California Environmental Quality Act,
10 based upon a building permit.

11 And I think the Warren-Alquist Act,
12 along with Senate Bill 5X, looks for energy
13 efficiency to be cost-effective, and hopefully
14 we're staying in that realm of looking at energy
15 use and the cost of it as being the base for
16 limiting lighting.

17 There is a lot of stuff in here. I've
18 previously directed staff to try to work with
19 California Planning Association. They're the ones
20 that enforce and enact zoning codes for
21 jurisdictions in California, and that coordination
22 I see is both vital and it's the biggest challenge
23 to doing something like this. It's how do you
24 coordinate with the local zoning.

25 Zoning changes. You can apply for a

1 rezone. So, gee, you're allowed some new watts
2 per square foot, but if they can get a rezone,
3 they're allowed so many other watts per square
4 foot. Or on one side of the street you get so
5 many square feet, the other side you don't.

6 There is also a lot in the zoning code.
7 Zoning codes get -- Please do not -- Corresponding
8 this to a lighting power density is completely
9 another process. The zoning process is a public
10 process in a public hearing, where someone goes to
11 the -- brings their attorneys and goes to the city
12 council, the planning commission, and says, gee,
13 you know, this is what I need for zoning. And
14 then there is a negotiation.

15 That is much different than a designer
16 working with a building official and saying, gee,
17 I've got this kind of factory usage and I need
18 this kind of lighting. For a zoning code, we'll
19 say, okay, yes, you are allowed for this use here.
20 That's what is coordinated between the building
21 owners, land use planners and the jurisdictions
22 and their architects. Yes, they know their
23 zoning, but there is negotiation beyond that.

24 Yes, you're allowed to build your retail
25 store, but you've got to agree that you're only

1 going to take deliveries on this back lot during
2 certain hours. Yes, you can build your softball
3 park, but we only want you to use it in certain
4 hours or certain days.

5 So the zoning is the -- the lines are
6 incredibly fuzzy between zones. They're
7 incredibly interpretive and they are negotiated.
8 So it's real hard to definitely say this is this
9 zone and this is exactly what that means, up and
10 down the state. We've got curfew -- You know,
11 lighting is very important to local planners. A
12 lot of input from sheriffs and police, as far as
13 lighting requirements. They're looking at minimum
14 watt, or minimum, excuse me, minimum footcandles
15 and things like that. And we're going to be
16 putting maximum watts per square foot.

17 We need to do that delicately and really
18 try to coordinate it with California Planning
19 Association, League of California Cities. Don't
20 ask cities to get between them and their sheriffs
21 and their police. They're not going to want the
22 state intruding that way.

23 A lot of things in the -- you know, the
24 zoning negotiation. You know, they want to build
25 their community park. Okay, and then they're

1 going to want to put lights in it for softball or
2 tennis courts, or yes, you can apply to have your
3 arena, you've got your park, you're going to have
4 a rodeo twice a year or you're going to have a
5 racetrack and use it X number of times per year,
6 per month. You're going to be negotiating
7 requirements into the zoning for parks and things
8 like that that are going to be very difficult.

9 The curfew, pre-curfew and daytime --
10 The curfew and daytime I guess that I kind of
11 figured that I understand that. I didn't see
12 anything in the benefits that really looked at the
13 time of day use, and also looked time zones to
14 population by metropolitan areas. That kind of
15 makes sense, that's a good way to do it. But, you
16 know, the populations change and, like you said,
17 what is a metropolitan area? That seems like a
18 burden that way, or a difficulty.

19 Likewise, ongoing enforcement. You
20 know, when we issue a building permit we can see
21 do they have controls that are able to set, you
22 know, we can look at the lighting that's
23 installed, lighting power density, we can take
24 care of that. We can look and see that they have
25 the controls to take care of the time of day.

1 We don't have the -- They build the
2 facility, they get their final permit, and they're
3 done with the building official. We have no
4 authority beyond that to go back and enforce that.
5 So it's -- Are we setting regulations that are
6 enforceable? That may be beyond the scope of the
7 building official.

8 So I commend the work done, just
9 recognizing that this is going to be a monumental
10 change in philosophy and enforcement.

11 CEC PROJECT LEAD FLAMM: Okay. I'd like
12 to -- Thank you, Tom. I'd like to give staff a
13 brief chance to respond.

14 Just curiously, we're getting a little
15 off of the agenda. How many people would like to
16 speak on this topic? Okay, I'm going to bend the
17 agenda a little bit, but I'm going to ask you to
18 keep your comments to about three minutes.

19 Now, Mazi?

20 CEC STAFF SHIRAKH: Yes. Enforcement is
21 paramount, and throughout this whole thing we've
22 thought about it. First and foremost, this is an
23 energy code, so it will be determined by energy
24 savings. And every measure that we recommend is
25 going to have to show positive paybacks, based on

1 life cycle costing. The environmental benefits
2 are offshoots that can be addressed through -- if
3 they can't be addressed through energy codes,
4 we'll address them, but energy drives it.

5 The concept of planning zones, you know,
6 we agree they're complicated. That's why we had
7 three alternatives up there for determining
8 environmental zones. And one of them is the one
9 that you referred to, is the one using populations
10 of metropolitan areas.

11 It is workable; it is true that they'll
12 change, but they'll change every ten years with
13 the new census, at the end of each decade. So,
14 you know, we can perhaps adjust it at that time.

15 By the way, is there anybody here that
16 represents CALTRANS? All right, and I would like
17 to ask you a question. I believe CALTRANS has a
18 definition for "metropolitan areas." Are you
19 aware of any such definitions? I know, like for
20 the use -- certain definitions, designate certain
21 freeways in metropolitan areas versus rural areas.

22 SPEAKER GABRIEL: (Off microphone)

23 CEC PROJECT LEAD FLAMM: I'm sorry,
24 could you come to the lectern and speak, and
25 identify yourself, please. Thank you.

1 SPEAKER GABRIEL: My name is Theresa
2 Gabriel, Traffic Operations in CALTRANS. The
3 question is for the rural area or metropolitan
4 area, what we usually define is the rural area and
5 urban area and suburban area. Physically, we go
6 by the average daily traffic for the going in one
7 area, if it is high. I can't remember, but it's
8 some way defined in the -- in some of our manual,
9 how it is defined.

10 Also, if we go and apply and warrant the
11 light installation, sometime also we usually use
12 the approaching speed. Because usually in the
13 rural area it is very high, more than 40 miles per
14 hour, concerned with -- when you compare it with
15 another area. But basically, for the definition
16 of urban versus rural, it's physically based on
17 the average daily traffic.

18 CEC STAFF SHIRAKH: Thank you. So there
19 may be definitions we can use, but essentially,
20 then, if we use these metropolitan areas, then,
21 Sacramento would be designated as an E3. And then
22 the city or the county may choose to designate
23 certain portions, like the American River Parkway
24 may be designated as E2 or E1, or Golden Gate Park
25 in San Francisco. But the whole area, by default,

1 would be E3. I don't know if that's a workable --

2 CALBO REP TRIMBERGER: That would, you
3 know, be something to coordinate with the
4 planning.

5 CEC PROJECT LEAD FLAMM: Right. I have
6 a pretty aggressive outreach to the city planners
7 and the League of California Cities, I'm just
8 curious, did anybody from any of those
9 organizations show up here? Because we really
10 would like your input.

11 Okay, thank you.

12 CEC STAFF SHIRAKH: Tom also mentioned
13 something about many local jurisdictions have
14 minimum requirements for illumination, so I think
15 that's an important point, that when we develop
16 our LPDs we'd better be careful to coordinate with
17 them. That, you know, they don't set a minimum
18 lighting level that's lower than our maximum, that
19 needs to be --

20 And just one more point I have, on
21 enforcement, you know, we agree with you that, you
22 know, when the building official leaves, you know,
23 it's probably -- we don't have much say about it,
24 but that is a problem with existing standards too,
25 you know. It's like we have shutoff requirements

1 for indoor spaces, and many times, you know, they
2 are commissioned properly but they don't always
3 stay at commission, and, you know, it is an
4 enforcement problem from that perspective.

5 But, you know, that's part of the old
6 standards, the enforcement dilemma.

7 CONSULTANT BENYA: I'd like to address
8 Tom's question about cities specifying light
9 levels and such during my presentation coming up
10 next.

11 CEC PROJECT LEAD FLAMM: Okay. I had a
12 couple more people wanted to speak. Gary?

13 SPEAKER FERNSTROM: Gary Fernstrom, the
14 Pacific Gas and Electric Company. This seems like
15 a good idea to me. I'll bet that when Title 24
16 was developed and lighting power densities were
17 established for different occupancies, based on
18 the IES guidelines for different tasks that
19 designers used, there was concern about how that
20 was going to be implemented and enforced. And
21 here, more than a decade later, we're dealing with
22 that quite nicely.

23 So the notion of establishing different
24 light levels for outdoor lighting, based upon
25 environmental considerations, seems to me to be

1 perfectly compatible to what we're currently doing
2 with indoor spaces.

3 CEC PROJECT LEAD FLAMM: Thank you,
4 Gary.

5 The gentleman back there?

6 SPEAKER SPENCER: Yeah, my name is Mike
7 Spencer. I'm with Sacramento County Building
8 Department. I'm an electrical plan check person.

9 Just listening to this, I find it very
10 disturbing that the Senate can pass a bill to --
11 that the motive of that bill is to conserve
12 energy. And it's obvious that if you turn off
13 lights, you save energy; if you don't install
14 lights, you save energy. That's obvious.

15 But all of a sudden, we've turned that
16 bill to save energy into an environmental agenda
17 program to where the environment has nothing to do
18 with building use or outdoor lighting in a parking
19 lot or something else like that. But we want to
20 now turn this Senate bill which said save energy
21 into creating four distinct mandated environmental
22 zones. That's not what the bill was about.
23 That's not what the bill addressed. And it's
24 totally improper and wrong, and it's misdirected.

25 Environmental has nothing to do with the

1 light usage that the bill had in mind for saving
2 energy, absolutely nothing.

3 CEC PROJECT LEAD FLAMM: Thank you,
4 Mike. Anybody that would like to address Mike?

5 Okay, any other comments? Charles?

6 CONSULTANT ELEY: Well, I was just going
7 to comment that the environmental zones are just a
8 way of -- they're a tool for the lighting
9 standards. They're not an end, in and of
10 themselves.

11 SPEAKER SPLITT: Yes, Pat Splitt from
12 APP-TECH, energy consultant and member of IES.

13 Just two things: One, I could see where
14 there could be an E1 zone adjacent to an E4, and
15 it seems to me you might have to come up with some
16 sort of interpretation of a buffer zone, similar
17 to what, say, agricultural zones have next to
18 residential. On a map there's just a line saying
19 one side it's agricultural, the other side it's
20 residential. But, in fact, the agricultural has
21 to pull back a certain distance so that there is
22 no possibility of pesticide spray getting into the
23 residential area. So something like that might
24 have to be thought about.

25 And the other thing is I've been dealing

1 for years with the city of San Jose and their
2 outdoor lighting ordinances, and have gotten them
3 to the point where they're committed to revising
4 both their outdoor lighting ordinance and their
5 street lighting standards. And I've sort of got
6 them put off to see what this proceeding is going
7 to provide.

8 And I'm thinking that the city would be
9 a great example for you to try, if you could --
10 had some money to interface with one municipality,
11 to just try to run by what you're proposing before
12 you actually make it a law, to see how it impacts
13 them. Because they have the whole range of
14 lighting from, you know, downtown metropolitan to
15 rural area, you know, E1, 2, 3, and 4. And they
16 already have a process started, where they're
17 reviewing their lighting standards now.

18 So I'd like to recommend, if at all
19 possible, that somehow you try to interface with
20 the city. And they also have a concern with Lick
21 Observatory, and I'm sure the Dark Sky Association
22 would like to get involved if something like this
23 started, and I think it would be a great example
24 and a great way of just testing what you come up
25 with in a real situation before it becomes

1 official.

2 CONSULTANT ELEY: Is there a particular
3 person in San Jose you'd recommend we contact
4 there?

5 SPEAKER SPLITT: Well, I could -- I've
6 talked to so many, I'd have to check and see who
7 that person is this week. But I can give you a
8 name later.

9 CEC PROJECT LEAD FLAMM: Jack.

10 SPEAKER SALES: Thank you for the
11 introduction. Jack Sales, International Dark Sky
12 Association. I can tell you we endorse
13 environmental zones, and it's not a new issue, not
14 a new idea, it's been used in many cities around
15 the country and it's a common topic.

16 In fact, I was in Placerville recently
17 and the discussion was are we environmental zone
18 one or maybe two? So you can see, and my
19 perspective is that many cities would adopt the
20 lower environmental zones, thinking they were
21 preserving not only energy but their local
22 environment. Thank you.

23 CEC PROJECT LEAD FLAMM: Okay. Mazi,
24 you have a comment?

25 CEC STAFF SHIRAKH: Yes. I would like

1 to emphasize that this is an energy code, and it
2 will have -- the energy life cycle costing is
3 going to determine what's going to get into the
4 code and what's not. And in many ways, this
5 parallels our building energy code and lighting
6 code that exists.

7 We're using the models, the procedures
8 that, you know, fairly well parallel the existing
9 energy code for the conditioned buildings. The
10 environmental benefits are -- to the extent that
11 they are cost-effective and can be justified on an
12 energy basis, may be addressed. But this is the
13 California Energy Commission and this is an energy
14 code.

15 CEC PROJECT LEAD FLAMM: I'd like to
16 make a statement also. Currently in our indoor
17 lighting standards, we have different light
18 levels. For example, in a retail store there is
19 one designated lighting power density that you're
20 allowed to install, in an office space there is
21 another, in a stairwell there is another. So we
22 already have that.

23 The term environmental zone was
24 developed by CIE, an international organization.
25 I think there is some misconception that by that

1 we're doing an environmental energy code. We are
2 just using a term that someone else developed and
3 an established standard for identifying what's the
4 difference between a retail store, what's the
5 difference between an office. So what's the
6 difference between E1, what's the difference
7 between E2.

8 So we're using a pre-established,
9 developed by CIE, promoted by the Illuminating
10 Engineering Society, so that is why it is termed
11 environmental zones.

12 CONSULTANT HESCHONG: I'd like to expand
13 on that concept. I agree with Gary, it's probably
14 unfortunate, the use of the term and they might
15 better be termed by us illumination zones rather
16 than environmental zones.

17 Part of the quest is to understand a
18 system that will allow the Energy Commission to
19 tie environmental zones to other legally defined
20 territories within California, so that it's very
21 clear and very obvious how that's done. But also,
22 create this system that is flexible and responsive
23 to local needs and to changing conditions, which I
24 think is very important in terms of making sure
25 that it's appropriate to local building

1 departments or local desires.

2 As Jack mentioned, Placerville may
3 choose specifically to have a lower illumination
4 level. I'm sure that if Las Vegas were part of
5 California, they would choose a much higher level,
6 given their political climate and given their
7 commercial climate. And so it allows for that
8 kind of tailoring.

9 CEC PROJECT LEAD FLAMM: Is there any
10 other -- Yes?

11 SPEAKER SPENCER: Mike Spencer,
12 Sacramento County. In responding to different
13 lighting levels for stairways and for office space
14 and those type of deals as being a precedent for
15 environmental or illumination zones, the big
16 difference is those and all aspects of the
17 building code are based on use, not on
18 geographical location and within some territory,
19 whether you call it an illumination territory or
20 something else, it's based on usage, not anything
21 to do with the environment.

22 The only thing that addresses anything
23 close to environment within the current CEC
24 standards is the climate zones, but that has to do
25 with temperature for insulation and buildings, not

1 geographic area. And when you start trying to say
2 geographic area and trying to coax it under a
3 usage area, that's something totally different.
4 It's not the same.

5 CEC PROJECT LEAD FLAMM: I think that is
6 going to be a good segue into the next topic,
7 which Jim Benya is going to present, the ETAL,
8 which is the Environmental -- Well, I'll let him
9 give the acronym.

10 CONSULTANT BENYA: Yeah, it's Evaluation
11 of Task Adaptation Luminance. And, you know,
12 Mr. Spencer brings up --

13 CEC PROJECT LEAD FLAMM: Jim, could you
14 lean into the mic?

15 CONSULTANT BENYA: That's right, I've
16 got to use the mic, sorry.

17 Mr. Spencer brings up a very interesting
18 point about the whole concept of the illumination
19 or environmental zones or whatever they're being
20 used, and I want to echo my concerns that the use
21 of the word "environment" here may be taken
22 incorrectly.

23 This was an international standard that
24 has been developed by the CIE. They used that
25 expression, not us. It is not meant to imply

1 green environmentalism as we may think of it in
2 other terms, so it's very important that we
3 understand that, first and foremost, this is an
4 international standard, and the intent of the
5 standard was to help us identify the different
6 needs of the human eye under different viewing
7 conditions.

8 One of the problems we've had over the
9 last history of electric illumination, going back
10 to the very first IESNA handbook and first
11 recommendations, has been how much light is
12 appropriate where, for what visual task, for what
13 circumstance. One of the things that the IES is
14 most famous for is providing those
15 recommendations, and it has done so in every
16 handbook and every document it produces relative
17 to those applications for many years.

18 We based all of our interior lighting
19 standards for Title 24 on those IESNA
20 recommendations. What we are proposing now is to
21 do exactly the same thing in exactly the same way
22 for exterior lighting. There is one fundamental
23 difference between interior lighting and exterior
24 lighting, and that is that the ambient light and
25 the light that changes the adaptation of the eye

1 is, where it's not constant in a building, it is
2 pretty well understood and pretty standard,
3 building to building. There are minor changes in
4 the interiors of buildings that affect adaptation.

5 In outdoor environment, that's entirely
6 different. You have, put in simple terms of
7 footcandles, the range of ambient light levels at
8 full moonlight is somewhere, depending upon who
9 you talk to, between .01 and .05 footcandles. The
10 range of ambient lighting on market street in San
11 Francisco is somewhere between five and ten
12 footcandles; in other words, somewhere between 100
13 and 200 times greater. That's a pretty big range
14 to expect the eye to adapt to, and yet the eye is
15 capable of it, given adequate time to make that
16 adaptation.

17 None of the IES standards that have been
18 published recently address this. It's a
19 shortcoming that the IES admits needs to be
20 addressed. And so one of the reasons that the
21 environmental zones and other things are now IES
22 policy is to address this fundamental issue which
23 has to do with the adaptation of the eye.

24 You can read the newspaper at .03
25 footcandles once your eye is dark-adapted to night

1 vision. You cannot read at .03 footcandles. You
2 can't even tell it's a newspaper. Your eyes are
3 adapted to a much higher light level, and that's
4 what this is all about.

5 Up until now, the IESNA nor anybody else
6 has had a means to establish what light level is
7 required, given a particular adaptation. And so
8 the process I'm about to describe to you which has
9 been recently accepted by the IESNA as its new
10 candidate, and I underline the word candidate
11 here, candidate methodology for establishing
12 future IESNA outdoor lighting standards. It's
13 called Evaluation of Task Adaptation Luminance; in
14 other words, a mean for taking the adaptation of
15 the eye into account for the first time in setting
16 standards.

17 It's funny, et al., which means "and all
18 of them," or it's a legal term often used in
19 describing a group of people, the evaluation of
20 task adaptation luminance, it determines the task
21 luminance, which is what we see that is required
22 for a specific visual adaptation. Your
23 adaptation, like I said, in an intrinsically dark
24 environment, such as driving down a country road
25 or in the mountains, is a far different level of

1 adaptation than driving down a city street. Or,
2 in other words, it identifies how much light is
3 necessary to see a task under different lighting
4 conditions.

5 And so it's a dynamic, potentially
6 dynamic measure that allows us for the first time
7 to, rather than just say arbitrarily we need one
8 footcandle, whatever, which is what we've done in
9 the past, now is to actually calculate it and
10 determine what really is needed.

11 Why it was developed: Historically, the
12 Illuminating Engineering Society of North America
13 develops consensus recommendations for outdoor
14 lighting. And those consensus recommendations
15 generally occur when a group of experts gets
16 together with a certain amount of scientific
17 information, hopefully, and says, okay, well, we
18 think that maybe you need one footcandle or half a
19 footcandle or some value, and that's the way it's
20 been done historically.

21 A year ago, the question was asked by
22 the Outdoor Environmental Lighting Committee, what
23 is the scientific basis of those recommendations?
24 And they found it was a very flawed scientific
25 basis. So the IESNA has agreed that this needed

1 to be a top priority fix, and the ETAL method has
2 evolved as the most advanced technology available
3 to do this. It provides visibility-based lighting
4 levels for a range of adaptation levels.

5 How it's calculated: This uses a
6 process that was originally developed by NASA for
7 the evaluation of visual scenes and visual fields,
8 and it's called spatial frequencies. What happens
9 with the eye, just like a camera when it views a
10 scene, is there is a scanning process. And as you
11 scan across, sharp transitions from low to high or
12 high to low, if you did a frequency analysis using
13 4EA transform methods, and 4EA transform is the
14 technique that's used here, you find that there is
15 a spectrum of frequencies that is created by sharp
16 transitions that goes off into the very high ends
17 of the spectrum.

18 In other words, it's a rapid change from
19 one extreme to the other, that causes a
20 considerable spectrum of odd harmonics of the
21 fundamental scanning or frequency rate, whereas
22 soft transitions such as a gentle transition from
23 a blue sky to a white cloud, especially not a
24 sharp-edged white cloud, is a little bit
25 different. It generates a much smaller spectrum,

1 without much in the way of harmonics.

2 Well, as you scan that scene, you
3 create, in essence, a digital 4EA description of
4 the visual scene with those images, in particular,
5 you start with an image of the scene, and those
6 spatial frequencies then come out of that
7 analysis. This is very powerful stuff, because it
8 is believed in general that a lot of information
9 is contained in the harmonics. So the more
10 harmonics there are, the more information you get.

11 In other words, the sharp edge between
12 a, if you're looking at a piece of paper, the ink
13 on the paper and the paper itself, the sharp edge
14 between the two contains a lot of information. It
15 defines the letter and other things that we
16 cognitively then figure out.

17 So the way this works, is once the scene
18 is established, first of all it can be
19 manipulated. In other words, things can be added
20 to the scene, such as the oncoming headlights of
21 another car or an overhead lighting system. Then
22 computer filters can be applied to that particular
23 scene to simulate different adaptation levels.
24 And so we can generate a scene, we can add things
25 to it, and then we can apply different adaptation

1 levels until we have a pretty good idea what can
2 and cannot be seen; in other words, what's your
3 visual acuity given various adaptation levels,
4 given a specific scene and specific lighting
5 conditions.

6 This methodology is about, oh, I'd say
7 about ten times more complicated than anything the
8 IESNA has ever done in the way of outdoor vision
9 and visual acuity, but it's a time-proven process
10 according to NASA and according to vision
11 scientists who have been sort of actually wanting
12 to use this for this application.

13 So, in other words, in order to perform
14 a task, you need a certain amount of light. If
15 your eye is adapted to low light levels, like I
16 said, you can read a newspaper at .03 footcandles
17 if you're dark-adapted, but you can't see it if
18 you're light-adapted. And so the ETAL process
19 will determine the task lighting conditions under
20 different levels of adaptation.

21 So what this means is that we'll be able
22 to predict your visibility, visual acuity. We
23 will do this for a range of people as well. Not
24 all of these standards are going to be set for 20-
25 year-olds, by the way; this will take into account

1 the more aging eyes of our population. So we're
2 not ruling out -- And you can bet we're also not
3 going to take blind people either. You know, the
4 two extremes are going to be ruled out. But folks
5 that have a reasonable opportunity to be driving
6 or walking in the outdoor environment will be
7 considered.

8 It is the job of the IES -- not this
9 group, not the California Energy Commission -- It
10 is the job of the IES to develop this process. It
11 is the job of the IES to develop standards and
12 recommendations based on this process. But it's
13 very important everybody here recognize, and
14 again, to the concerns of Mr. Spencer among all of
15 you, the whole idea behind this is coming up with
16 you need less light to see when you're walking at
17 Yosemite National Park than you do to see when
18 you're walking on Market Street.

19 It is a waste of energy, a waste of
20 energy to illuminate Yosemite National Park with
21 the same light level as you need to light Market
22 Street. That is the point. And the whole idea of
23 environmental or lighting zones or whatever you
24 want to call them is that we want the IESNA to
25 develop standards that differentiate between those

1 two significant adaptation conditions and give us
2 different lighting level requirements based on
3 them.

4 One of the problems that this
5 introduces, and this is the first time it's being
6 significantly used in calculations other than in
7 another method called small target visibility is
8 that glare changes adaptation level. Everybody's
9 witnessed this as a driver, when an oncoming
10 automobile has high beams on and you are
11 temporarily blinded. That will be part of this
12 process, the ability to simulate that particular
13 event and events like it is going to be part of
14 this process. How it is dealt with is yet to be
15 seen, but it does have significant bearing on the
16 results of the calculations.

17 High light levels also change adaptation
18 level. This is the problem where, as I witnessed
19 last night driving through Roseville, as you're
20 driving down a street that's got what I would
21 consider to be low light levels of illumination
22 and suddenly there's a brand-new car lot out there
23 that the light levels are not only high, but the
24 spill of the light from the luminaires onto the
25 road is somewhat blinding, relative to what's

1 going on on the opposite side of the road. That
2 has got to be able to be simulated and taken into
3 account as well.

4 So, in other words, using ETAL, the
5 IESNA technical committees can optimize ways to
6 maintain an adaptation level. This enhances
7 visibility and it increases the time needed to
8 see. As part of all of IESNA's work, the
9 application committees are going to be coming back
10 with publications, recommended practices, design
11 guides and other methods to explain to people
12 problems to avoid, because you create difficulties
13 in adaptation when you do, let's say, a car lot
14 that is too bright immediately adjacent to a
15 roadway.

16 The first step, the IESNA committees
17 will determine the visual tasks for typical
18 outdoor areas. Those areas include roadways,
19 parking lots, walkways, outdoor retail, signs,
20 facades and roadways.

21 Step two -- Well, let's take a look at a
22 picture. Here is a photograph just showing what
23 some of -- the photograph that will be taken for
24 each of the test cases probably looks something
25 like this, and you can see -- for example, if you

1 scan across the blue sky, you go through that
2 cloud, spatial frequencies are very, very low.
3 There are no harmonics.

4 As I scan across that line, though, I
5 come to very high spatial frequencies right in
6 here. It starts to taper off, starts to get high
7 again as I go through that area. It's kind of low
8 coming this way, very high spatial frequencies,
9 very low spatial frequencies. They start to
10 increase here and get very high here again.
11 That's the process of analysis. That's the way it
12 works.

13 And, as you can see, the information,
14 which is what the eye is looking for, is revealed
15 by the spatial frequency analysis. This type of
16 image-based analysis, which will be done for the
17 first time, is how the IESNA committees will set
18 up these standards.

19 Step two is to analyze those images, in
20 terms of spatial frequency, and to create visual
21 models that will be used for further analysis.

22 Step three, simulate different levels.
23 Simulate lower adaptation levels by applying
24 computer filters to the scene. A computer filter
25 is not unlike the tone controls on an audio

1 system, where you change the bass and treble.
2 It's kind of like turning down the treble. As you
3 do, you lose some of the intelligibility of the
4 signal, and that will also happen visually using
5 this methodology.

6 It then adjusts the analysis to
7 determine how much light someone will need to see
8 a task under different lighting conditions -- how
9 much light do you need to see that bicycle on the
10 side of the road -- and that is what will be
11 performed here.

12 In typical outdoor scenes, the ETAL
13 system will give us required luminances for
14 specific tasks performance. Being able to see the
15 bicycle by a 60-year-old woman to the side of the
16 road, for example, would be one of the possible
17 outcomes. For different adaptation levels, she
18 would be simulated or he would be simulated to be
19 driving under a dark adaptation and under
20 adaptation that was temporarily driven upwards or
21 D-adapted by a bright, let's say, parking lot to
22 the side of the road.

23 The response and the effects of
24 disability glare, in particular, and I see the
25 simulation of oncoming automobiles with different

1 headlight systems, particularly high beams. And
2 we will be looking at the adaptation level
3 increases and task contrast decreases under those
4 conditions.

5 How will the results be used? The
6 Illuminating Engineering Society will be producing
7 for us, really for the nation, not for us but for
8 everyone, task illuminance levels for different
9 adaptation levels relative to environmental zones.
10 In other words, we will be getting new IESNA
11 recommendations based on those environmental or
12 illuminance zones, and that is the foundation from
13 which the Title 24 standards will be built.

14 Again, this is not an environmental
15 standard. All we're going to do is what we always
16 did for interior lighting, is take these
17 illuminance levels, figure out a responsible model
18 that allows for that illuminance level to be
19 achieved by a modern lighting system of reasonable
20 energy efficiency. We'll probably add a little
21 bit of wiggle room as we usually do, it's usually
22 around in the neighborhood of two to five percent
23 for site conditions and other issues. And then
24 that becomes the standard value. So it's a very
25 fair process, it's one we've been using for 25

1 years.

2 In an E1 zone glare is going to be a
3 critical element, because it's going to be
4 believed that the E1 zone is going to be driven by
5 the need for the eye to stay as dark-adapted as
6 possible. So glaring lighting systems are going
7 to be a real significant issue in consideration
8 there, whereas an E4 zone, glare pollution, light
9 pollution and light trespass are going to be
10 considered to be probable existing conditions that
11 need to be addressed.

12 When lighting levels and adaptation
13 zones are established, outdoor lighting models
14 will show appropriate lighting power densities,
15 again using the model we've always used for
16 interior lighting.

17 What's the advantage of this? This will
18 be the first time ever that the recommendations of
19 the IES will take into account visibility, glare
20 and other factors in a calculated model.
21 Previously it's only been done by a combination of
22 some preliminary modeling and consensus of
23 experts. This is going to remove to a certain
24 extent the judgment of the experts and replace it
25 with some rather hard numbers.

1 And it will include disability and
2 discomfort glare tolerances. It's one of the
3 things that we expect the IESNA committees will be
4 doing is we'll be saying, well, as long as the
5 brightness of an oncoming headlight does not
6 exceed so many candelas per square meter, that
7 your adaptation will be managed with a street
8 lighting level of, you know, ten lux or something.
9 We expect that type of result as well.

10 Any questions, discussion?

11 CEC PROJECT LEAD FLAMM: Was that the
12 last slide?

13 CONSULTANT BENYA: That was the last
14 slide, yes.

15 CEC PROJECT LEAD FLAMM: Okay. Any
16 questions? Tom.

17 CALBO REP TRIMBERGER: I'm Tom
18 Trimberger with CALBO, California Building
19 Officials. I'm really not -- I'm certainly not a
20 lighting expert, so I'm not going to pretend to
21 be, so I'm going to ask questions.

22 The IESNA you kept saying will determine
23 and will be evaluating and will be doing
24 something. Is this something that's hot off the
25 presses, that's cutting-edge, so to speak?

1 CONSULTANT BENYA: Very good question.
2 It is hot off the presses, it is not cutting-edge.
3 It is something that has needed to occur for some
4 time. In my opinion, the IESNA's outdoor lighting
5 standards and outdoor lighting recommendations
6 have been somewhat the stepchild of interior
7 illumination. And, as a result, interior
8 illumination which is far better documented by the
9 IESNA over the years, is -- exterior lighting
10 needed to catch up with it.

11 Something that you brought up earlier
12 and I wanted to address too was municipalities set
13 illumination level standards rather often.
14 They're all over the map, by the way. Industrial
15 and commercial companies set standards, shopping
16 centers set standards, and I've been involved in a
17 number of these issues throughout California for
18 the last 20 years.

19 The problem that we run into is there is
20 no standard to those standards. They are
21 arbitrary, sometimes capricious, sometimes they
22 aren't even technically correct. One of the --
23 That's something this is not going to address.

24 The ETAL method by IESNA will address
25 it. The ETAL method will say, for visibility in a

1 parking lot in an environmental zone E2, you need
2 so many candelas per square meter of illuminance
3 or probably, we'll probably translate that into
4 footcandles to keep it easy. I'm sure that will
5 happen. It will be a different value in an E2
6 environment than it will be in an E4 environment.

7 And one of the things cities are going
8 to have to do, every city in my opinion that has
9 passed some sort of lighting law or ordinance, and
10 there are hundreds of them in California, there
11 are hundreds of them right around Sacramento,
12 every one of them is different. You know, that
13 creates a major enforcement problem. You've got
14 different rules in Los Angeles than San Francisco
15 than Sacramento than, you know, any other
16 municipality.

17 I would expect that trying to come up
18 with a standard for this would help you in your
19 job and the people that you represent by creating
20 a common standard. But that is not -- The Energy
21 Code is not going to do that. That's a whole
22 separate set of issues, but they're related.

23 CEC PROJECT LEAD FLAMM: Lisa?

24 CONSULTANT HESCHONG: I'd like to
25 continue on that thought, in that IES is going to

1 use this method to establish illumination
2 standards, and there are private illumination
3 standards that are maintained by local
4 jurisdictions or private entities, but the Energy
5 Commission is not going to establish illumination
6 standards, they are going to establish energy
7 usage standards, lighting power density standards.

8 And the translation there is efficiency.
9 So local jurisdictions can maintain their
10 illumination standards if they can achieve them
11 within given efficiency levels. The ETAL method
12 that Jim is describing is the methodology that is
13 going to be used to establish and justify these
14 lighting power densities, but it will not dictate
15 an illumination level.

16 CEC PROJECT LEAD FLAMM: Mazi, you have
17 one?

18 CEC STAFF SHIRAKH: To follow what
19 they're saying, it again parallels our interior
20 spaces. For instance, for offices, you know, we
21 have models based on the spatial geometry,
22 reflectances, the type of luminaire that you use,
23 and illumination levels, footcandle levels that
24 are suggested by the IES.

25 So we're using almost exactly the same

1 model. The only thing is that for outdoor
2 lighting, we don't have the footcandle levels as
3 established as we would like it to be. So the
4 only thing that ETAL is doing is filling that
5 piece of the puzzle so we can put it in our model
6 and crank it and come up with a lighting power
7 density.

8 CALBO REP TRIMBERGER: My concern is
9 kind of -- well, having been involved in code
10 development on the national and the state level,
11 that a code is or an energy standard here that is
12 going into Title 24 is essentially a law. It's a
13 go/no go, it's a yes, you can/no, you can't, which
14 is different perhaps, and I'm not familiar with
15 IESNA, than a lighting standard or a lighting
16 recommendation that they give to a designer.

17 That is something that they make a
18 recommendation to a designer for him to use, along
19 with his or her experience, knowledge and
20 understanding to develop something that is
21 appropriate. So as far as a law, you typically --
22 if you get high-tech, you get in trouble a little
23 bit, and maybe that's oversimplifying, but a law
24 has to be defensible. Even if it's capricious --
25 not capricious, that's not a good word --

1 arbitrarily picked by the local jurisdiction,
2 that's something that they're willing to live
3 with. And that's what they've decided.

4 So I'm just -- would just be a little
5 bit cautious in that you're writing -- an energy
6 standard is a Title 24 and not a recommendation,
7 so don't cut it too close there is all -- It just
8 concerned me a little bit, you know. You've got
9 to make it past the rule of law where, you know,
10 if I'm going to be operating a circular saw or an
11 automobile, I'm going to need enough light to be
12 safe, whether I'm in Yosemite or Times Square.

13 CEC PROJECT LEAD FLAMM: I'd like to
14 restate what Mazi said. Our current interior
15 standards were, the law was based on IES design
16 standards. So what we did is we took IES-
17 recommended design standards, modeled rooms based
18 on those recommended design standards, and from
19 that backed into lighting power densities that
20 became the law.

21 So it's going to be a similar process,
22 where we're looking to IES to set the design
23 standard by which we can then assign lighting
24 power densities to it.

25 CONSULTANT BENYA: Gary, I'd like to

1 just chime in one other thing. As a practitioner
2 and a registered engineer in the state of
3 California, when I do a design my design is
4 generally judged on its competence, based on
5 internationally and nationally recognized
6 standards, even if they're not code. So, in other
7 words, if I grossly overlit or grossly underlit
8 something, the standard that would be utilized in
9 a court of law would be the IESNA standard that
10 was applicable at the time.

11 That's one of the reasons why we use it
12 here, because it has that kind of strength, and
13 that's very important to us all. But your point
14 is a really good one, because the thing that
15 happens in outdoor lighting, and if Nancy Clanton,
16 who is one of our team members, were here, she
17 would talk about something, so I will instead,
18 called light level creep.

19 What happens is that in outdoor
20 lighting, someone has got some lights in the
21 parking lot and someone builds a property next
22 door, and they say, well, I want mine to be a
23 little bit brighter than theirs, and so they start
24 increasing the light level. And then the people
25 next door say, well, we want ours to be brighter

1 than theirs, and the next thing you know, you've
2 got parking lots with excessive lighting in all
3 respects.

4 That will not be able to occur once
5 these standards go into effect. You will be able
6 to provide the appropriate amount recommended by
7 the IES, to the best of our ability to provide
8 that, but you won't be allowed to do an excessive
9 amount of lighting, just like you aren't allowed
10 to do an excessive amount of interior lighting
11 today.

12 SPEAKER SPENCER: Mike Spencer,
13 Sacramento County. The thing that I'm having
14 trouble grasping is building codes and building
15 design, which I enforce in Title 24 every day,
16 have to do with the use of the space, not where
17 the space necessarily is located within a
18 building, but what the use of the space is.

19 And when you talk about whether they're
20 environmental codes or whatever, the problem I'm
21 having is a parking lot needs illumination for
22 what purpose, to get to your vehicle, to where
23 you're going and back to your vehicle? And in
24 some metropolitan areas, if you want to call it
25 that way, so you don't get mugged in between

1 there. And that's why lighting levels are
2 established by local ordinances.

3 But a parking lot in Yosemite is not
4 necessarily less likely to get you mugged between
5 the parking lot and somewhere else, despite what
6 the surrounding deal is. So what you're doing
7 with a standard, and you're calling it an
8 environmental zone and I'm not against that per
9 se, what I'm saying is you're creating four
10 different levels for a parking lot.

11 And what disturbs me is who decides what
12 these levels are? Who decides? Is it this
13 Commission? Is it the Senate? Who decides what
14 that level is? Is it an arbitrary decision? Is
15 it the local jurisdiction or what? And when I see
16 this being created, it's like all parking lots are
17 not created equal anymore. You're not just
18 parking, you're walking from there or whatever.
19 And it just -- it escapes me what the difference
20 in the use is.

21 If I need to walk from my car from point
22 A to point B, I need a certain amount of
23 illumination, and I don't care if it's daytime or
24 not. I may have more than that if it's daylight,
25 but I need a minimum level of illumination. Now,

1 that minimum shouldn't be any different, whether
2 I'm in San Francisco or not, because I've been in
3 a ballpark, and I walk out to that parking lot and
4 I can still get mugged.

5 CONSULTANT BENYA: Mike, that's what the
6 ETAL method is all about, is you're actually wrong
7 on that.

8 SPEAKER SPENCER: Okay.

9 CONSULTANT BENYA: If your eye -- If
10 you've been at the ballpark and you've been
11 watching a scene that's got, you know, 20, 30
12 candelas per square meter, you've been exposed to
13 a very bright lighting system, and you were
14 suddenly to go out into a parking lot illuminated
15 to the levels that I think, you know, probably are
16 appropriate, I professionally think are
17 appropriate at Yosemite, you would be blinded, you
18 would not be able to see anything. You would have
19 trouble recognizing danger coming. You'd have
20 trouble finding your car.

21 On the other hand, if you've been at
22 Yosemite and you've been in that environment for
23 some time, and you go out into a parking lot lit
24 to the light levels that are appropriate there,
25 you'd be able to see everywhere. You'd be able to

1 see danger coming, and you'd be able to see your
2 car and everything you need to, your keys, etc.
3 Because your eyes are differently adapted.

4 You probably have gone into a dark
5 restaurant or a motion picture theater on an
6 afternoon, and you were temporarily blinded when
7 you've gone into that. It's called tunnel effect.
8 It occurs whenever you go from one extreme of
9 adaptation to another. The period of your eyes
10 adapting can sometimes be seconds, but often it
11 minutes and even can take as long as an hour to go
12 from one extreme to the other.

13 And what we're talking about is a little
14 bit of that, and it occurs, you're not aware of
15 it. You go through life with it every day. But
16 it does occur and it does affect the amount of
17 light you need to see. And this process, which
18 has been developed to actually answer the question
19 that you just asked, we expect to give us
20 different results under different conditions. If
21 we don't, then the numbers won't be different.

22 If you're right -- In other words, if
23 you're saying, hey, it's no different at Yosemite
24 than it is at 3Com Park, then the numbers won't be
25 any different.

1 SPEAKER SPENCER: I've spent enough time
2 in the outdoors to know you don't look in a fire,
3 okay, so I understand what you're saying. But
4 what you're saying is some commission somewhere,
5 whether it's local, state, or whatever is going to
6 decide that this portion of the state is going to
7 be dark and going to be different. That's
8 environmental and geographically. That's not
9 energy conservation. That's the point I'm trying
10 to make.

11 And this section of the state over on
12 the coast is going to be an E2 because we choose
13 to say it's going to be an E2, not that it needs
14 to be an E2 or whatever else. That's geographic
15 and that's environmental, and that's arbitrary,
16 based on whoever this commission is, whether it's
17 local -- It's better if it's local, because they
18 know what their own needs are.

19 But the coastal commission over here can
20 decide, well, we're going to be E2, just like he
21 was talking about Placerville. That's their
22 right, that's fine, I don't have a problem with
23 that. But somewhere someone is going to decide
24 that certain areas of this state are going to be
25 one luminance level and other areas are going to

1 be another, and that's arbitrary, unless it gets
2 down to the local, local level of enforcement.

3 And you're expecting us to enforce it on
4 the forms, with Mom and Pop that come in, and they
5 don't even know where to get this illuminance
6 schedule. I can't even -- I don't have one at
7 Sacramento County. I can order one, I can get
8 one, but it's not given to me by the jurisdiction
9 to tell me what all your illuminance levels are.
10 The only ones I got are the ones that are in the
11 standard. I don't have the full list.

12 CONSULTANT HESCHONG: I think you're
13 absolutely right, that it's important to have the
14 granularity of how that gets decided at the local
15 level as much as possible. Different
16 jurisdictions have control of different
17 territories in the state of California. For
18 instance, we do have a coastal commission that has
19 control of the development in coastal law, it's a
20 state law.

21 To the extent that they have that
22 control over development, they may be the
23 appropriate local jurisdiction. If it's the city
24 of Sacramento, if it's the county of Sacramento
25 that's determining the zoning in an area, this

1 approach to different illumination zones allows
2 that local jurisdiction to tailor it specific to
3 their needs so that it's not a statewide mandate
4 of what has to be done, it's being justified at
5 the local level. That's specifically the intent.

6 SPEAKER SPENCER: So if I understand
7 that right, you're saying the local level has to
8 adopt the state program?

9 CONSULTANT HESCHONG: The local level
10 may adopt the specific levels. In the absence of
11 them adopting, defaults may apply.

12 SPEAKER SPENCER: So you're envisioning
13 that this new energy deal will be that if the
14 state chooses to adopt -- I mean, if the local
15 jurisdiction chooses to adopt something else, they
16 can?

17 CONSULTANT HESCHONG: No, if they choose
18 to designate a different territory as a different
19 environmental zone with, following the
20 requirements of the law and the justification of
21 the law, they can make those adaptations.

22 SPEAKER SPENCER: Well, before we really
23 respond, we'd have to know where this is coming
24 from. In other words, where the authority lies.
25 In other words, because I still can't get beyond

1 the fact that we're going beyond the mandate of
2 what the Senate bill was all about, which was to
3 save energy.

4 And it's going beyond that, in that it's
5 taking on maybe worthwhile stuff, but that's not
6 what the Senate bill was about. It was to save
7 energy because we didn't have enough power plants
8 to produce it.

9 CONSULTANT HESCHONG: The hope is to be
10 able to save energy at the level that's most
11 appropriate at the local jurisdiction, so that --

12 SPEAKER SPENCER: No, it didn't say most
13 appropriate. It said that it was cost-effective
14 and appropriate.

15 CONSULTANT HESCHONG: Well, the cost-
16 effectiveness --

17 SPEAKER SPENCER: Most appropriate, we
18 could light candles.

19 CONSULTANT HESCHONG: Okay. The cost-
20 effectiveness relates back to the adaptation
21 level. Or to tie it to Jim's example, if in
22 Yosemite National Park somebody put in an
23 extremely bright glaring baseball diamond --

24 SPEAKER SPENCER: That would be the
25 state of California.

1 CONSULTANT HESCHONG: -- the state of
2 California puts in this incredibly bright baseball
3 diamond, what it would do is it would change
4 everybody's adaptation level so that they needed
5 higher levels of illumination throughout the park,
6 because they had been exposed to this very bright
7 light.

8 That would be energy wasteful, because
9 all of a sudden you would be requiring higher
10 levels of illumination everywhere in response to
11 one local high usage.

12 SPEAKER SPENCER: Then why don't we make
13 everything the same darkness? In other words, if
14 we're going to save energy, let's make it all E1.
15 It's not practical.

16 CONSULTANT BENYA: Believe me, the
17 International Dark Sky Association would love
18 that, but --

19 (Laughter.)

20 SPEAKER SPENCER: Well, I'm sure, but --

21 CEC PROJECT LEAD FLAMM: Charles, do you
22 have a point to make?

23 CONSULTANT ELEY: Yes. I think we're
24 getting way off track here. The --

25 SPEAKER SPENCER: I'll just yield,

1 that's fine.

2 CEC PROJECT LEAD FLAMM: Sir --

3 CONSULTANT ELEY: We're not --

4 CEC PROJECT LEAD FLAMM: Mike, we'd like
5 to hear from you, so stay there.

6 CONSULTANT ELEY: We're not developing
7 an environmental standard, this is just a tool
8 that we think may be important. I think what
9 would help is if we were able, Mazi, to move on to
10 the measures and see exactly how these
11 environmental zones are going to be used and how
12 ETAL is going to be applied.

13 When we set up these agendas, there is
14 always a debate, well, do you start, do you
15 present the measures first and then explain later
16 how you plan to develop the measures? What we did
17 today is we started out with some rather abstract
18 concepts out of the context of the standards that
19 we're planning to develop. And I'd suggest that
20 we move on to those measures, and I think that a
21 lot of the questions will become more clear.

22 CEC PROJECT LEAD FLAMM: Okay. We're a
23 little off the agenda, but I think there are a few
24 more points, I want to make sure everybody gets
25 their issues addressed or at least get the chance

1 to speak.

2 There's a couple of people in the back,
3 Lisa. Sir?

4 SPEAKER MILLER: Richard Miller, vice
5 president and director of electrical engineering
6 with Hellmuth, Obata and Kassabaum, architects and
7 engineers.

8 When Title 24 was first developed, it
9 was based on the lighting recommendations of the
10 Illuminating Engineering Society, which had a
11 published document for all of us to review. What
12 I'm hearing now is proposing legislation based
13 upon the standard that has not been published, is
14 not available for review. Comment on that?

15 CEC PROJECT LEAD FLAMM: Jim?

16 CONSULTANT BENYA: Well, Rick, you found
17 the soft underbelly of what's going on here. This
18 ETAL process that we've been discussing, along
19 with the environmental zones, are now accepted by
20 the IESNA to a greater or lesser extent. I say
21 greater because the environmental zones are
22 policy; the ETAL method is the lead candidate for
23 the analysis methodology. And funds are being
24 directed, work is under way, and we believe we're
25 going to start getting results in a couple of

1 months.

2 We propose, and, as Charles pointed out,
3 we're going to show you measures, each of the
4 measures that we're recommending, we're going to
5 show you those a little bit later, and in each one
6 of them you can start to imagine there are going
7 to be four values. For a parking lot, there's
8 going to be an E1 value, E2 value, E3 value, and
9 an E4 value.

10 The way it's going to occur is that we
11 will probably put in surrogate values to the best
12 of the research that's available the day we've got
13 to publish that document, keeping in mind that
14 this is a process that it starts now and gets
15 concluded a little over a year from now. And we
16 would probably have to have pretty much the final
17 values by the first of the year, 2003. And the
18 plan is to push the IES to give us those values.

19 The default condition that the team has
20 talked about so far is that in the event that the
21 IES fails to come forth with environmental zones
22 and fails to come forth with the individual
23 values, we will use the current publications of
24 the IES and set one or two or whatever number of
25 values are appropriate, based on the publications

1 that are available to date that we've got to make
2 a decision, keeping in mind that one of the
3 beauties of Title 24 is that it goes through
4 periodic review, goes through -- you know, every
5 three years it's rethought a little bit, and we
6 talk about stuff and maybe in the future we can
7 update it with more information.

8 What we're trying to do is, yeah, we're
9 looking at a crystal ball, to a certain extent.
10 We are pushing the IESNA to fix a longstanding
11 problem. They are responding. We might not get
12 everything we want by June 1st of this year. We
13 might get everything we want by January 1st of
14 next year, and, if so, it can probably make it
15 into the standard.

16 One of the things we do want to do is in
17 the measures we're going to show you shortly is to
18 say here are the measures, and we do want to get
19 the language of the measures pretty much nailed
20 down by our next hearing, which is coming up in a
21 couple of months. Those will be nailed down, and
22 then hopefully all we'll be debating will be the
23 values and looking at the ETAL research to tell us
24 how we got to those values.

25 CEC PROJECT LEAD FLAMM: Tom, there are

1 a couple of people over there, if you don't mind
2 if I get to them. Dawn?

3 SPEAKER DE GRAZIO: Hi, Dawn DeGrazio,
4 Sacramento Municipal Utility District as of ten
5 days ago.

6 My question is very similar to Rick
7 Miller's, and it's the timing issue. And I
8 understand things are underway at IES, and even
9 though I'm a member, I'm not privy to all of the
10 things that are happening behind the scenes;
11 however, I do know how long things take.

12 And even though somebody is cranking out
13 or a bunch of people are cranking out numbers,
14 there is still a process in getting IES
15 documentation out the door, and it's a long
16 process because then people have to review it, and
17 they have to make comments, it has to be approved
18 by this committee, that committee and the board
19 and the whole thing, and it seems like this energy
20 code is going to be based on preliminary things as
21 opposed to something that is going to be a hard
22 fact.

23 And so that when the IES finally comes
24 out with documentation of the ETAL process and the
25 results that this code would be based on, it might

1 be different than what the code gets based on
2 because it's being written before things are done.
3 You know, like you said, assumptions are being
4 made.

5 And so, as a part of the energy code
6 process, is there going to be some fill-in-the-
7 blank stuff where there would not be hard numbers
8 so that it could be referring back to a document
9 that has the numbers, which seems kind of clumsy?
10 I just have a concern about that, things being
11 done, that the cart is ahead of the horse or
12 something like that.

13 CONSULTANT HESCHONG: Thanks, Dawn. I
14 think one way to look at this process, and it is a
15 race against time because we have a legislative
16 mandate to achieve regulations by a certain time
17 period, that if we don't have more information, we
18 can start with the simplest possible approach at
19 this point.

20 What we've outlined for you here, with
21 four zones and different application areas, as we
22 go through this research and based on what's
23 available, it may simplify down to the lowest
24 common denominator of the information that's
25 currently available, or, to the extent that we

1 have more information, it may achieve a higher
2 level of granularity. We don't know at this
3 point.

4 What we've tried to lay out for you
5 today is the greatest range of detail that we may
6 reasonably expect to achieve within this time
7 period, but it may be considerably less.

8 CEC PROJECT LEAD FLAMM: Tom?

9 CALBO REP TRIMBERGER: I don't want to
10 belabor this or anything, but the difference
11 between a design standard and a recommendation and
12 a code, a minimum code, enforceable code is really
13 different. You said you would not, you know,
14 they'll look at -- different people's eyes adapt
15 differently. So you wouldn't look at a 20-year-
16 old person and you wouldn't look at a 60-year-old
17 person and you wouldn't look at a blind person.

18 Well, that is one of the beauties of the
19 Building Standards Commission is they do look at
20 the blind people, and it has to be accessible to
21 everyone. Our standards do require building
22 construction for blind people, for wheelchairs,
23 for the extremes. And so I'm just urging a little
24 caution in that regard.

25 CONSULTANT BENYA: That's a very good

1 point. We're talking about outdoor lighting and
2 universal accessibility. As is true in building
3 codes of all kinds, you know, there are issues.
4 The Illuminating Engineering Society produces a
5 document called RP-28, which is for older folks.
6 It describes recommendations for designing
7 facilities for people who are octogenarians and
8 septuagenarians and so on.

9 And, to a certain extent, those are
10 addressed by the standards. And, of course, it's
11 something that we've talked about for interior
12 lighting as well. It's a very appropriate
13 discussion there.

14 I was only trying to make a point that,
15 you know, most of what we are going to be talking
16 about with outdoor lighting standards -- not all,
17 but a significant portion -- has to do with
18 vehicle/people interactions. And, you know, it's
19 a complex equation, because you've got the vehicle
20 headlights, which are the primary source of
21 illumination under 35 miles per hour. Your
22 primary source of illumination is headlights.
23 Above 35 miles per hour, then ambient lighting can
24 play a significant role.

25 What ETAL does for the first time,

1 though, is introduce off-axis brightness and other
2 things, glare, that have not been able to be
3 modeled previously using computer models. And to
4 the questions we've all been asking, who decides
5 this? Well, the answer is the mathematics decide
6 it. The mathematics are going to give us the
7 answers.

8 Reasonable decisions, such as we're not
9 going to illuminate the road for 100-year-old
10 drivers, it's not rational. Standards won't be
11 based on that. But the ability of someone to see
12 a curb in a parking lot will be based on someone
13 80 years old in a wheelchair, possibly with even
14 some minor vision defects. That is universal
15 accessibility.

16 So please take into account the fact
17 that this group, and I want to reinforce that our
18 team are not the ones who set the standards. The
19 Illuminating Engineering Society will do what they
20 always have done. Dawn's point, yes, we're a bit
21 ahead of the IES, we knew that going in, because
22 the IES is slow.

23 And yes, we have a fallback position,
24 which is if the IES fails to deliver -- Right now
25 there are IES publications that apply to

1 everything we're talking about. And if we need to
2 simplify them back to that for this round of the
3 standard, we will.

4 CEC PROJECT LEAD FLAMM: Commissioner
5 Pernell, or Commissioner Rosenfeld, I'm sorry.

6 COMMISSIONER ROSENFELD: Hi. I'm sorry,
7 I missed some of this fine discussion, because we
8 had a competing meeting, but I just wanted to say
9 that -- encourage you guys in what you're doing.
10 I understand that all of the research hasn't been
11 done and the rules aren't there and you aren't
12 going to solve all problems and you're probably
13 going to end up for 2005 with writing down a third
14 of the things that you'd actually like to write
15 down, but that doesn't mean we shouldn't write
16 down any of them.

17 So just a couple of thoughts that went
18 to mind. First of all, talking about parking lots
19 and automobile sales lots, and I think, darn it,
20 there is a difference between a parking lot in
21 Yosemite and a parking lot in Manhattan. And it's
22 partly straight visual and it's also partly that
23 one of the things that one worries about in
24 Yosemite is ice on the asphalt.

25 And I assert that if you are in

1 Manhattan you are probably not carrying a
2 flashlight on your own, but if you're in Yosemite,
3 you only got to the parking lot or you're only
4 going to leave the parking lot because you went up
5 there prepared to face some ice, and so you're
6 going to be more cautious, or maybe you're 100
7 years old and you don't go. So there really is a
8 difference, and I applaud you for pointing out
9 that there can be a difference.

10 And the other one is just an obvious
11 statement and maybe it came up three times, but,
12 darn it, there is a difference between an
13 automobile sales lot in Vacaville, which is an
14 insult when you're driving by, and it's not
15 Manhattan, and the sort of advertising that you're
16 going to do in Broadway, wherever Broadway is. So
17 I do think we have to address this problem and we
18 are going to go only part of the way, but let's
19 address it. That's my sermon.

20 CEC PROJECT LEAD FLAMM: Ma'am?

21 SPEAKER DAVIS: Yes. I'm Leslie Davis,
22 an associate with Auerbach and Glasow, lighting
23 consultants in San Francisco. And I too applaud
24 the committee for this process, and think that it
25 will give us better standards in the future. I

1 agree with Rick Miller and Dawn that I think we
2 may be a little ahead, and I appreciate your
3 information about how -- what the fullback
4 position will be.

5 Because this visibility issue is so
6 critical and when we get into the ETAL evaluation
7 and how it will adjust the light level
8 requirements based on issues of glare and other
9 substantive relative or relationship, lighting
10 relationships, how will we address existing
11 conditions?

12 Because if a zone, and this goes to the
13 enforcement after the building permit, so if we
14 have designated a zone as zone E2, and we have one
15 of these service stations or car lots adjacent,
16 then does that throw off all of the values and the
17 ability to address and enforce those values for
18 new installations? Thank you.

19 CONSULTANT BENYA: I'll tackle this one,
20 Leslie. The energy code, as we pointed out
21 several times, is an energy code. It's applied in
22 the same manner under construction permitting, in
23 general, that any Title 24 energy code has ever
24 been applied. It's not going to be any different.

25 The problems concerning existing

1 conditions is a real brain-cruncher.
2 Historically, and again as I mentioned a couple of
3 times, most municipalities have some sort of
4 lighting nuisance type of laws. We call them
5 nuisance laws, because generally, you know, it's
6 light trespass that is the problem.

7 And light trespass laws unfortunately
8 vary so much across the nation, not to mention
9 across California, that it's difficult to say
10 there is a common ground among them. Some of them
11 aren't even competently written. Some of them
12 refer to, you know, candlefeet per square foot,
13 and things like that. And, you know, we realize
14 they're not even competent much less enforceable.

15 It's going to be up to the communities
16 to decide what they want to do about existing
17 lighting, in terms of controlling the amount, in
18 terms of making any aspect of this retroactive,
19 but it's going to be more in the area of nuisance
20 laws and light pollution and light trespass
21 ordinances than it's going to be a Title 24 thing.

22 We are active in the International Dark
23 Sky Association and other organizations. NEMA and
24 other groups are looking at and providing some
25 guidance to communities along those lines. It's

1 not our responsibility as part of the energy code
2 to do that, but it's a good point.

3 CEC PROJECT LEAD FLAMM: Mazi?

4 CEC STAFF SHIRAKH: Again, I'd like to
5 reiterate this is an energy code and we are, to
6 the extent possible, paralleling the existing
7 lighting standards for buildings. So it would be
8 applicable to mostly new construction.

9 And, you know, we have stipulation
10 within the existing standards for tenant
11 improvements, that if people do certain type of
12 things, they have to bring the existing lighting
13 up to the code. So, you know, you could think
14 about those possibilities for the outdoor lighting
15 standards as well.

16 That gentleman there, now, you've been
17 raising your hand.

18 SPEAKER FERGUSON: I'm John Ferguson
19 with Holophane Lighting. And when I read Title
20 24, it seems to be on watts per square foot in all
21 situations. Is that what you're proposing, that
22 all the outsides are going to be watts per square
23 foot and will they be -- how are they going to
24 interface with, either being luminance or
25 illuminance, as far as like you have a roadway

1 separating from your parking lot, and some will be
2 footcandles, some will be candela per meter
3 square, and it seems to be --

4 CEC PROJECT LEAD FLAMM: I think what
5 we're going to do is we're going to have -- the
6 way I see this, I'm not saying this is the way,
7 but it's going to be watts per square foot, watts
8 per acre, something, some kind of lighting power
9 density. But we will get there by doing some kind
10 of modeling.

11 So the modeling will account for the
12 footcandles. From that we say, okay, here is the
13 lighting power density that you need to get that
14 amount of footcandles.

15 SPEAKER FERGUSON: Right, because the
16 IES separates that, between what you have on a
17 roadway and then what you have in a parking lot.
18 They don't give you a candela per meter in the
19 parking lot.

20 So there's a -- I've always found it
21 kind of confusing there.

22 CONSULTANT BENYA: It's very simple.
23 Just like if you do an interior Title 24
24 calculation using particularly the area category
25 method or the tailored method, you take the area

1 of the space and you multiply it times a certain
2 power density that you're allowed for that space.
3 So if you have a meeting room of 1200 square feet,
4 you get 1.5 watts per square foot for the meeting
5 room, so that's how many watts you get for this
6 room.

7 SPEAKER FERGUSON: So your lighting
8 levels will depend on the efficiency of the
9 fixtures.

10 CONSULTANT BENYA: The lighting levels
11 will depend upon the efficiency of the fixtures.

12 SPEAKER FERGUSON: Okay.

13 CONSULTANT BENYA: You will be allowed,
14 as we always have, enough power to do the job
15 correctly. You will not be allowed enough power
16 to do the job wastefully.

17 SPEAKER FERGUSON: Right.

18 CONSULTANT BENYA: So we will make
19 certain assumptions, for example, about the light
20 source. Light sources will be efficacious light
21 sources. You will not be able to achieve
22 appropriate light levels using tungsten light
23 sources, for example. You will have to use metal
24 halide, high-pressure sodium, some other high-
25 efficacy source in order to achieve IESNA-

1 recommended light levels.

2 It's what we've always done for interior
3 lighting, it's no different.

4 SPEAKER FERGUSON: Okay.

5 CEC PROJECT LEAD FLAMM: Jack?

6 SPEAKER MELNYK: Yes. I'm Jack Melnyk,
7 Southern Cal Edison lighting engineer.

8 Just a quick question, Jim. Do you
9 have -- How do you propose to address outdoor
10 lighting uniformity?

11 CONSULTANT BENYA: Oh, boy. You ask a
12 good question, Jack. Uniformity -- Well, let me
13 back up and tell you, in terms of the IESNA
14 Roadway Lighting Committee RP-8, which is the
15 current recommended practice for roadway lighting,
16 is two significant and different means for doing
17 roadway lighting calculations, both of which are
18 recommended and you have your choice of one or the
19 other.

20 If you use the footcandles and
21 uniformity method, you calculate based on
22 horizontal illumination on the surface of the
23 road, both the amount of illumination and the
24 uniformity of that illumination.

25 CEC PROJECT LEAD FLAMM: Jim, could we

1 hurry this up?

2 CONSULTANT BENYA: Yeah, I'll make it
3 one minute.

4 CEC PROJECT LEAD FLAMM: Okay, thanks.

5 CONSULTANT BENYA: The second method is
6 the small target visibility, where you calculate
7 the visibility of a small target along the
8 roadway, and this will be a new method. This new
9 method will not deal with uniformity directly; in
10 other words, you're not going to be given six-to-
11 one or eight-to-one or anything else, it's going
12 to be how visible it is, regardless of the
13 uniformity.

14 We expect that it will relax the
15 uniformity requirements, as compared to the
16 uniformities as we know them today.

17 CONSULTANT ELEY: The short answer,
18 though, is we're not writing a standard for
19 uniformity. We hope that we're going to develop
20 lighting power densities that will permit designs
21 that provide uniformity and designs that provide
22 adequate illumination.

23 CEC STAFF SHIRAKH: Again, I'd like to
24 mention that a lot of the things we're doing is
25 very similar to indoor lighting. When we come up

1 with our lighting power densities for offices, we
2 have assumptions for special separations and
3 fixtures which considers uniformity.

4 We're getting off track here; we're
5 about three topics behind.

6 CEC PROJECT LEAD FLAMM: All right, and
7 it's 12:25. I'd like to recommend that we go
8 ahead and take a lunch break, but instead of
9 taking a full hour take something less than an
10 hour. What is the -- Be back at 1:00? Do you
11 think everybody could do that?

12 CEC STAFF SHIRAKH: Sure.

13 CEC PROJECT LEAD FLAMM: Okay. So why
14 don't we recess until 1:00 o'clock.

15 (Thereupon, the luncheon recess was
16 held off the record.)

17 --oOo--

1 A F T E R N O O N S E S S I O N

2 CEC PROJECT LEAD FLAMM: Well, I can
3 tell by the agenda that we're way off on the
4 agenda. We're going to have to try to squeeze
5 things in. I'm willing to stay a little later
6 tonight, but I don't want to assume everybody here
7 wants to stay late, so we're going to try to get
8 this done in time.

9 So we're going to start it right up with
10 the next presentation, which is going to be
11 Unconditioned Buildings, and Larry Ayers is going
12 to make that presentation.

13 CONSULTANT AYERS: Thank you, Gary.

14 As Gary said, this is unconditioned
15 buildings. If we could have the next slide,
16 please.

17 This proposed measure is to expand the
18 scope of Title 24 to include unconditioned
19 buildings in Title 24. Right now Title 24 doesn't
20 address unconditioned buildings, and, as we heard
21 earlier, you can have a warehouse or whatever and
22 if it's conditioned it does fall under Title 24,
23 but if it's the same thing but it just doesn't
24 have heating, for example, then it doesn't.

25 And this proposal is to include the ones

1 that don't have any air conditioning. The benefit
2 of this is to save energy. We're going to save
3 energy and also the peak demand by providing a
4 standard for buildings that are not now covered by
5 a standard. Then they will have to use the same
6 energy-efficient techniques that the conditioned
7 buildings do. So the real key reason for doing
8 this is to save energy.

9 The enforcement mechanism: There are
10 basically a couple of things that we propose doing
11 for -- Well, first of all, it's the same as the
12 enforcement mechanism for conditioned buildings.
13 So we're just going to do the same thing with
14 unconditioned buildings as we now do with
15 conditioned buildings. But this is mandatory
16 measures for lighting controls, and prescriptive
17 requirements for lighting power density.

18 We're going to make sure that these are
19 cost effective. We're going to have building
20 models for the types of buildings that this would
21 affect. And some of these models already exist
22 for conditioned buildings, and chances they're
23 going to be just the same for unconditioned
24 buildings.

25 For example, the warehouse, it could be,

1 you know, like a general high bay or auto repair
2 or an unconditioned mall, but models for these
3 already exist in Title 24. And ASHRAE 90.1
4 includes models that may also be appropriate, like
5 for an automotive facility or a parking garage or
6 a workshop or an atrium, something like that.

7 And then the cost-effective, continuing
8 the cost-effectiveness approach for controls, what
9 we're going to do is estimate the initial cost of
10 the control, determine in the case of lighting
11 hour reductions how many hours you have to reduce
12 the lighting use in order for the control to be
13 cost-effective.

14 So, essentially, what we're proposing to
15 do is to put unconditioned buildings into Title 24
16 and have Title 24 regulate them. Gary?

17 CEC PROJECT LEAD FLAMM: Okay. Before
18 we do Q and A, there were two other formal
19 submittals that were received, and we'd like to
20 give about five minutes each, first for Watt
21 Stopper?

22 WATT STOPPER REP PATON: Good afternoon.
23 I'm Doug Paton from The Watt Stopper. I'm here
24 just supporting all of the unconditioned measures,
25 that there aren't any -- we don't believe there

1 are any cost barriers to effective controls, from
2 the smallest building to the largest that are
3 unconditioned. Thank you.

4 CEC PROJECT LEAD FLAMM: Thank you.

5 And Jack, is Jack here? Oh, there you
6 are.

7 SPEAKER MELNYK: Yeah, I'm here. Yeah,
8 I read Larry's paper and the presentation I made
9 fits in very well with what he's doing. I'm
10 merely in a sense resurrecting the application of
11 occupancy sensors to unconditioned multi-level
12 parking lots or underground parking lots. And I
13 left enough information in my document that
14 verifies that it works and has worked well for ten
15 years at a very major lot in the LA area.

16 There may be more than one such lot in
17 the LA area, and there are a few others sprinkled
18 around the country, but there has been no adverse
19 effect whatsoever on the tens of thousands of
20 people that have used that lot over ten years.
21 And the very interesting thing is they've had
22 almost zero maintenance in ten years. They group
23 re-lamped at ten years, they did no spot re-
24 lamping, and they're facing another probably ten
25 years with no maintenance until the next group re-

1 lamp, so I'm happy to submit that.

2 CEC PROJECT LEAD FLAMM: Thank you,
3 Jack. I'd like to open it up to questions and
4 answers, but please try to keep your questions to
5 about two minutes. Thank you.

6 SPEAKER HOGAN: John Hogan, City of
7 Seattle. This seems like a no-brainer to me.
8 When you look at 90.1, the difference between
9 conditioned and unconditioned only applies to
10 building envelope. It doesn't apply to lighting,
11 it doesn't apply to water heating equipment, space
12 heating equipment, space cooling, whatever it is.

13 I don't know that I necessarily see the
14 need for analysis.

15 CONSULTANT ELEY: This is mainly an
16 issue of statutory authority which the Commission
17 didn't believe it had until 5X came along, so
18 that's why.

19 SPEAKER HOGAN: And I'm not sure how
20 you're going to approach actually putting this in.
21 I'd be concerned if your analysis showed some
22 different set of requirements for unconditioned
23 versus conditioned, I hope we're not heading down
24 a path that might lead to those results.

25 CONSULTANT ELEY: We don't expect that.

1 If their analysis -- One thing is this isn't
2 parallel to the general building standards update,
3 so if we do an analysis and find out that
4 warehouses that are standard for warehouses should
5 be changed, it will be changed for both
6 conditioned and unconditioned.

7 CEC PROJECT LEAD FLAMM: Anybody else?

8 SPEAKER SPLITT: Pat Splitt with
9 APP-TECH. In general, I think this is a great
10 idea, and one thing it will prevent is something
11 that happens now, is a lot of unfinished
12 warehouses are built where the builder actually
13 knows it's going to be conditioned a few months
14 after they finish the building, and they don't
15 bother to circuit it correctly and have to end up
16 after two months re-circuiting everything, just
17 ripping out everything, which is crazy. So this
18 actually will save money in the long run, along
19 with everything else.

20 But one thing I've noticed is that a lot
21 of warehouses have more daylighting, a lot of
22 skylights, and I think right now the daylighting
23 requirements are a little bit difficult to apply
24 in all these instances, especially where you have
25 vertical and horizontal daylighting, and the

1 definition of where and when a light fixture is in
2 the daylit zone, when actually the daylit zone is
3 on the floor and the light fixture is up in the
4 ceiling.

5 There are some problems there that make
6 it difficult to actually comply with a lot of
7 scenarios, and I think not just for the
8 unconditioned but for all spaces the daylighting
9 requirements need to be looked at a little bit
10 better, especially in these spaces where there is
11 more daylighting or there actually could be 100-
12 percent daylighting. A lot of warehouses don't
13 need lights at all during the day.

14 But the light fixture actually in some
15 might be technically in a daylit zone and some not
16 in a daylit zone, and they'd have to circuit them
17 different. The vertical daylit zone has to be
18 circuited separate from the horizontal daylit zone
19 when actually they may overlap. And it's just
20 very difficult to figure out what it all means.

21 CEC PROJECT LEAD FLAMM: Okay, thank
22 you. Mazi?

23 CEC STAFF SHIRAKH: Just a response to
24 John Hogan. Some unconditioned buildings may be
25 very similar to conditioned buildings, in which

1 case the LPDs will be the same, but some actually
2 will be rather different, like parking structures
3 that are open and outside, where you don't have
4 walls that reflect the light back.

5 So those may be a little bit different,
6 so when we model them we might have to take those
7 into consideration and come up with the LPDs that
8 are somewhat different.

9 CEC PROJECT LEAD FLAMM: Okay. No other
10 comments? Great, I'm going to move on. This is
11 how the afternoon is going to go.

12 (Laughter.)

13 CEC PROJECT LEAD FLAMM: There were two
14 formal proposals that we received that did not fit
15 neatly into any of our measures that we were going
16 to speak of. One was by Watt Stopper and the
17 other was from NEMA.

18 Watt Stopper, would you like some more
19 time? By the way, your slides are up on the
20 computer. You sent three slides, if you'd like us
21 to pull them up.

22 WATT STOPPER REP PATON: That's okay,
23 I'll make this quick.

24 I'm Doug Paton from The Watt Stopper,
25 and we would like a recommendation as to executive

1 order D-1901 be extended to all buildings that
2 apply to Title 24, or are in Title 24. And that's
3 implementing two parts of that.

4 One is to make sure that the
5 infrastructure is there for bilevel control of
6 lighting, similar to what happens interior, so
7 that for the curfew hours there is a circuiting
8 and structures in place to reduce the lights. And
9 then the second part of that is to make sure there
10 are controls to reduce the lights for the curfew.

11 CEC PROJECT LEAD FLAMM: Thank you.

12 Cheryl?

13 NEMA REP ENGLISH: I'm Cheryl English
14 with Acuity Lighting Group and director on the
15 board of the Lighting Systems Division for NEMA,
16 here today representing NEMA.

17 NEMA, the National Electrical
18 Manufacturers Association, represents 80 percent
19 of the luminaire market. The NEMA members are
20 actively involved in various lighting
21 organizations such as IES, IALD, LIRC, IDA, and
22 NCQLP.

23 The NEMA members are keenly aware of
24 lighting performance tradeoffs and the importance
25 of lighting systems that meet user requirements.

1 NEMA strongly endorses activities that promote
2 good lighting practices with energy consumption,
3 safety and security, preservation of the
4 environment in mind. NEMA is also aware of issues
5 related to lighting installations and life cycle
6 cost issues.

7 The NEMA proposal recognizes that
8 outdoor lighting requires careful consideration of
9 many variables, including visibility, safety and
10 security, energy effectiveness, cost and
11 environmental concerns. NEMA encourages the
12 consideration of application standards in lieu of
13 product standards. In most cases, restricting the
14 use of a general product type does not provide the
15 flexibility necessary for effective lighting
16 designs and limits the use of new and advanced
17 technologies.

18 In that respect, the NEMA members have
19 questioned the effectiveness of mandates that
20 require, quote, "shielded luminaires," which have
21 been defined in a variety of non-consistent
22 manners in the past. The IESNA cutoff
23 classifications relate to luminous intensity in
24 specific zones. With the exception of full cutoff
25 classification, the cutoff classifications do not

1 prescribe limits on uplight.

2 Many states have focused on the full
3 cutoff luminaires to limit skyglow; however, NEMA
4 studies have shown that the use of full cutoff
5 luminaires may not reduce skyglow, when
6 considering the impact of light reflected off of
7 ground surfaces. Furthermore, the full cutoff
8 luminaires increase initial cost due to the use of
9 more luminaires and poles in order to achieve
10 equivalent lighting performance. And I'd have to
11 say that those studies on the lighting performance
12 are related to the existing IES procedures related
13 to illuminance and uniformity requirements.

14 I'm very anxious for the "ETAL for
15 Dummies" workshop, because I want to learn more
16 about that particular process.

17 (Laughter.)

18 NEMA REP ENGLISH: The use of more
19 luminaires obviously increases energy consumption
20 and maintenance cost. Specific data related to
21 this issue is presented in the NEMA proposal and
22 I'm not going to go through specifically. I know
23 copies are in the back that you can review. The
24 NEMA studies have also shown that other optical
25 cutoff classifications with strict limits on

1 uplight can achieve the necessary performance
2 while minimizing energy usage and cost.

3 Products exist in today's marketplace
4 for all cutoff classifications with limited
5 uplight, including non-cutoff. So I have five
6 points here to make with regard to the proposal.
7 NEMA strongly encourages the use of full cutoff
8 luminaires for the appropriate applications;
9 however, full cutoff luminaires may not address
10 all the necessary optical characteristics for
11 application.

12 Therefore, the key component of the NEMA
13 proposal would encourage the consideration of
14 limits on uplight component, rather than a full
15 cutoff mandate. NEMA has suggested a limitation
16 of two-percent uplight, and the two-percent number
17 we believe will allow wider optical distributions
18 that cannot be achieved with the full cutoff due
19 to stricter intensity limits between 80 and 90
20 degree distribution.

21 This will support the California
22 objective to lower watts per square foot, provide
23 necessary intensity to illuminate vertical objects
24 such as buildings and pedestrians. The two-
25 percent uplight will also provide the ability to

1 incorporate visual interest and visual cues into
2 lighting design where appropriate. Visual
3 interest is included in the IES handbook now and
4 it applies to exterior applications just as much
5 as it applies to interior applications.

6 The second point, NEMA recognizes the
7 need for a full cutoff mandate in those
8 environmental zones where strict optical control
9 is necessary to preserve a designated dark area.
10 Number three, NEMA endorses guidelines that
11 promote a minimum illuminance level adequate to
12 the intended purpose and recognizes the IESNA
13 guidelines for illuminance levels.

14 Number four, while it's not specifically
15 stated in the NEMA proposal, NEMA encourages the
16 use of lighting controls for outdoor lighting.
17 This is addressing a question that we had after
18 this middle was sent in. Number five, and really
19 I guess a very important part is that NEMA
20 recognizes the importance of exemptions to any
21 regulatory requirements.

22 These exemptions include situations
23 where a federal law, rule or regulation preempts
24 the state law, situations where outdoor lighting
25 is used on a temporary basis, situations where

1 significant public safety interest exists, where
2 lighting is used solely to enhance the aesthetic
3 beauty of an object or structure; situations where
4 a qualified lighting professional has determined
5 that such lighting is not cost-effective, based on
6 a life cycle cost analysis.

7 Luminares used to replace products that
8 are damaged or inoperable, lighting for special
9 events such as sporting events, monuments,
10 historic areas, state or national flags. These
11 exemptions would be restrictive and would require
12 the maximum level of shielding that is feasible
13 for the application, and many of those
14 restrictions would require the utilization of
15 controls or curfews to address the energy issues
16 specified by California. Thank you.

17 CEC PROJECT LEAD FLAMM: Thank you.
18 Mazi?

19 CEC STAFF SHIRAKH: Cheryl, you know,
20 we've discussed your proposal, mainly the full
21 cutoff versus cutoff extensively, and I've had
22 some discussions with our team as well as
23 Commissioner Rosenfeld. And I've tried to
24 represent your position the best that I could.

25 And from what I understand, what NEMA is

1 suggesting is that using full cutoff because of
2 the way the light exits the fixture would
3 necessitate more fixtures in order to achieve
4 uniformity. So, you know, we have to put in more
5 poles, more fixtures.

6 Now, the question that comes up is why
7 is it necessary to send photons up into the sky of
8 two percent in order to achieve uniformity? Why
9 is it not possible to have fixtures that directs
10 all the lights towards the ground and achieves the
11 uniformity that you would get from a cutoff
12 fixture.

13 NEMA REP ENGLISH: Well, the optical
14 design is a complex process, and it's possible to
15 design light fixtures that direct all the light
16 straight to the ground. That will not satisfy all
17 of the requirements of a visual field of view in
18 outdoor lighting, the very dynamic field of view.

19 The two-percent uplight that NEMA has
20 designated is based on a study of existing
21 technologies. The difference between full cutoff
22 and cutoff is that between 80 and 90 degrees,
23 there is much more restrictive intensity limits in
24 that zone. So we can sit down with a computer
25 optical model and we can model that to work

1 perfectly, where there is no uplight. But when
2 you get into variances in materials used to make
3 the optical systems, variances due to the
4 manufacturing processes, you're going to get a
5 little bit of light at 90 degrees, in a lot of
6 cases.

7 And so to design something that's going
8 to be really restrictively controlling the light
9 at 90 degrees is really not practical from a cost
10 standpoint. There would be a significant cost to
11 be able to try and control those variances. The
12 two-percent uplight is not significant, and by
13 designing a system that's less restrictive in that
14 80- to 90-degree zone will give you a broader
15 distribution of light, it will allow you to space
16 the poles farther apart, and reduce the number of
17 fixtures and poles within that area.

18 Again, we're not saying that we don't
19 endorse the use of full cutoff, because we do.
20 But it's not appropriate for every application,
21 especially in applications where it's required to
22 light sides of buildings, and we've got rendering
23 models that we can present to the team on
24 streetscapes to show that it's very important to
25 light the sides of buildings in downtown urban

1 areas, and that is not well-accomplished with full
2 cutoff optics.

3 COMMISSIONER ROSENFELD: I'm not going
4 to get into the point of that, but I don't think
5 we're going to solve this problem with general
6 words. Because you could have made the same
7 argument, exactly the same argument for why ten
8 percent of the lights should go up. And until we
9 look at the design of a fixture --

10 NEMA REP ENGLISH: Sure.

11 COMMISSIONER ROSENFELD: -- I find
12 myself totally not comprehending.

13 NEMA REP ENGLISH: Well, and, I mean, if
14 we want to make it ten percent, that's even less
15 restrictive. What NEMA is trying to do is to be
16 respectful of the energy and the environmental
17 concerns.

18 I think that in a lot of cases, if the
19 visual requirements are all low to the ground and
20 low light level types of things, ten percent could
21 be wasteful, if it's emitted up directly into the
22 sky. So we're --

23 COMMISSIONER ROSENFELD: Sure, that
24 would be ten-percent wasteful at a minimum.

25 What I guess Mazi and I would like to

1 see, actually, is a somewhat serious analysis of
2 the design of fixtures. So my general point of
3 view is for most cases, you really don't want any
4 light even close to horizontal. You probably want
5 a cutoff 20 degrees below the horizontal, and why
6 you can't make a cleaner cutoff in 20 degrees
7 rather than 23 degrees is just not clear to me.
8 We need to get together.

9 NEMA REP ENGLISH: We can make it,
10 Commissioner.

11 The other thing with regard to why you
12 would not want the light there is dependent upon
13 what's going on in that particular application.
14 If you're trying to light a space with artistic
15 effects or aesthetic effects and you want to
16 utilize a light source to do that, you want the
17 sparkle, you want the visual interest, and a lot
18 of times the light fixture is used to accomplish
19 that.

20 COMMISSIONER ROSENFELD: Okay.

21 NEMA REP ENGLISH: You're not going to
22 get visual interest with something that has a
23 cutoff at 80 degrees or less, because all the
24 light is going to be directed so far down --

25 COMMISSIONER ROSENFELD: You're telling

1 me that when I look along the street, I really
2 want to see all those little bright spots going
3 out to the horizon.

4 NEMA REP ENGLISH: It depends on the
5 design intent.

6 CONSULTANT BENYA: Actually, if I might
7 jump in here, sometimes you do. The principle is
8 knowing where the light source comes from. There
9 was a problem that indirect lighting has dealt
10 with in the past, and we actually deal with an
11 outdoor lighting design.

12 If you used totally what is often called
13 full cutoff lighting today to design urban
14 environment, people get the perception the space
15 is underlit, because they don't see the sparkle
16 and the glare Cheryl was referring to. So there's
17 actually a reason --

18 NEMA REP ENGLISH: I don't think I
19 referred to glare, did I?

20 CONSULTANT BENYA: Well, no, you refer
21 to sparkle, I'll throw in the glare.

22 NEMA REP ENGLISH: Okay.

23 (Laughter.)

24 CONSULTANT BENYA: But there is actually
25 a psychological, maybe, or I'm thinking it's

1 learned reason why that is somewhat desirable.

2 The question is how much desirable, the percentage
3 and so on.

4 But let me just segue, because I think
5 the point may be moot. Whether there is a
6 percentage of uplight, whether the angle of 80 to
7 90 degrees is critical or not, a lot of this is
8 going to come out of the ETAL method. Because you
9 get pluses and minuses with the radiation above
10 about 70 degrees or so.

11 COMMISSIONER ROSENFELD: Because it
12 makes glare.

13 CONSULTANT BENYA: Because of the
14 potential for creating glare in addition to
15 creating uniformity. If you recall, I said
16 earlier I think uniformity, which is at the core
17 of NEMA's point, if we stick with modern standards
18 of uniformity and illuminance, Cheryl's, in my
19 opinion, right. The NEMA position is correct. It
20 makes all kinds of physical sense, and I've
21 actually studied this to a great extent.

22 The bigger question is, is uniformity in
23 that type of distribution as important as we think
24 it is? It is the opinion of most of the people
25 who attended the Outdoor Lighting Forum that

1 established the ETAL method that it probably
2 isn't, that by eliminating glare, you improve
3 adaptation. And you can see better, even though
4 you have fewer footcandles and you have less
5 uniformity. That's the belief of where we're
6 headed.

7 If we're right, the ETAL will prove it;
8 if we're wrong, the ETAL method will prove it.
9 And so I think we've got to give the ETAL method a
10 chance to, first of all, tell us how important
11 uniformity might be. Because it could be we're
12 both right.

13 NEMA REP ENGLISH: And with regard to
14 the ETAL method, I didn't make comments earlier,
15 but I do applaud IES and the lighting
16 professionals who are pursuing this. I think it's
17 long overdue that we look at lighting based on
18 visibility. I share the concerns with many others
19 that it's not -- it didn't exist until four weeks
20 ago. And so this is going to be a significant
21 learning process, it's going to require
22 significant data to make this defensible, and for
23 us to all be sure that we are quantifying lighting
24 performance appropriately.

25 I also have concerns in that for years

1 we've struggled in the measurement of luminance,
2 which is why we default to illuminance. It's easy
3 to measure. It's very difficult to measure
4 luminance because of field of view.

5 I'm anxious to learn more about it. I'm
6 not convinced that the ETAL method is going to
7 result in the appropriate vertical illumination
8 required for different tasks. And I'm not
9 convinced that it's appropriate for this activity
10 this group here today is dealing with, but I'm
11 encouraged by the process.

12 CEC PROJECT LEAD FLAMM: Gary?

13 SPEAKER FERNSTROM: Gary Fernstrom,
14 Pacific Gas and Electric Company. We take
15 exception to the breadth of NEMA's recommended
16 exceptions. It would seem that considered in
17 total they reduce to the situation where, if a
18 qualified lighting designer doesn't think the
19 standards are a good idea, there ought to be an
20 exception for that.

21 So I would encourage the Commission and
22 NEMA to try and constrain the list of exceptions
23 to just those absolutely necessary.

24 CEC PROJECT LEAD FLAMM: Okay, thank
25 you. I don't want to go off on a tangent on this.

1 There is going to be an opportunity at the end of
2 the agenda to address new items. So what I'd like
3 to do is keep the comments to directly what either
4 Watt Stopper or NEMA just presented.

5 Mazi?

6 CEC STAFF SHIRAKH: Okay. Back to
7 cutoff versus full cutoff. Then what I understand
8 is, in order to -- between that 80- and 90-degree
9 angle, in order to have sufficient uniformity, you
10 have to give some light in that zone.

11 Then from what I understand, you're
12 saying that to do that, you're going to have to
13 have some spillage above 90 degrees. Is that an
14 optical engineering problem? Is it physics? Is
15 it cost?

16 NEMA REP ENGLISH: It's not an optical
17 engineering problem, it's more of a logistic issue
18 of the materials, performance and the
19 manufacturing process.

20 CEC STAFF SHIRAKH: It's cost,
21 basically, then, isn't it?

22 NEMA REP ENGLISH: Sure. Yeah, it could
23 be manufactured with very, very tight tolerances.
24 It would not be an effective product in the
25 marketplace.

1 CEC STAFF SHIRAKH: Okay, thank you.

2 CEC PROJECT LEAD FLAMM: Thank you.

3 SPEAKER SPLITT: Pat Splitt from
4 APP-TECH. I just wanted to mention one thing that
5 I discovered when I was selecting outdoor lighting
6 fixtures and parts, sort of decorative Franklin,
7 you know, old-style-looking fixtures, is the
8 manufacturer had supplied a chart that supposedly
9 showed you at various angles what the intensity of
10 the light output of the fixture was, and these
11 charts for some of these fixtures didn't show any
12 light going up over 90 degrees, which I thought
13 was really good until I looked at the fixture and
14 it didn't seem like there could be no light going
15 out.

16 So I got them to send me the photometric
17 bios, and examined them and found out that what
18 they did is they only measured the fixture from
19 zero to 90 degrees. And there are actually two
20 tests. You can either measure from zero to 90 or
21 zero to 180, and I'm not sure that they're
22 necessarily forced to measure from zero to 180.
23 But, in fact, if you're going to be referring to
24 photometric files for outdoor fixtures, you'd
25 better stipulate that indeed the test is made from

1 zero to 180.

2 CEC PROJECT LEAD FLAMM: Thank you, Pat.

3 John?

4 SPEAKER HOGAN: John Hogan, City of
5 Seattle. We've had some discussion about cutoff
6 fixtures for our expanded lighting requirements,
7 and I don't think it needs to be an all or
8 nothing, that you can decide that there are
9 certain places where it's appropriate or not
10 appropriate. So if you've got 30- or 40-foot-tall
11 poles in parking lots or something that maybe
12 don't really need much spill because you should be
13 covering the area down there, maybe you set some
14 light limit or maybe you take particular uses,
15 wherever it would be appropriate.

16 And that's sort of where the
17 recommendations have come down for our exterior
18 lighting requirements.

19 CEC PROJECT LEAD FLAMM: Thank you.

20 Jack?

21 SPEAKER SALES: Jack Sales, IDA. I
22 basically -- After what was just said, there are
23 many places where two-percent uplight is far too
24 much, and there are some places where it's
25 appropriate to have some side light, but maybe

1 it's more appropriate to design it that way.

2 I think as a whole IDA is not in favor
3 of two-percent uplight. We would like to see full
4 cutoff in those places that appropriate, of
5 course. So I'm rather concerned about the
6 position taken.

7 CEC PROJECT LEAD FLAMM: Thank you.

8 COMMISSIONER ROSENFELD: Can I, just to
9 make a sort of constructive remark. I guess if
10 NEMA were to start off in its presentation by
11 saying that sending light upwards is a waste of
12 energy, and some spillage may be necessary because
13 of the reasons which you gave -- design
14 considerations and so on -- but it should be
15 minimized, I would be happier.

16 But somehow or other, my sort of general
17 reaction to this is I think we all in this room
18 are sick and tired of flying over American cities
19 where you can see a lot of light down beneath the
20 airplane -- I mean, that's just stupid. And we
21 ought to say that, and then say we'll do the best
22 we can, subject to economics, over the next --
23 with new fixtures to get around that problem.

24 Does that make sense?

25 NEMA REP ENGLISH: It makes sense.

1 Because we're here dealing with an energy issue,
2 however, the distribution of the products is going
3 to impact the number of luminaires used, and it
4 could have negative implications on the energy if
5 we don't allow light at high angles.

6 COMMISSIONER ROSENFELD: Again, it's
7 only an economic design issue. I mean, where you
8 want the money spent, like on an automobile
9 headlight, the cutoff is good to about one degree.
10 And they're a little more expensive. But it's not
11 at all clear that you can't design fixtures which
12 have better cutoff than today's fixtures, it's
13 just not clear to me.

14 NEMA REP ENGLISH: Well, maybe I don't
15 understand the process here. I thought that this
16 was based on existing technologies. You know, if
17 we're talking about new technologies --

18 COMMISSIONER ROSENFELD: Between 1975
19 and 1985, despite the disclaimers of the whole
20 American automobile industry, we went, over their
21 dead bodies, from 14 through 28 miles per gallon,
22 and the lighting industry can make some progress
23 also.

24 NEMA REP ENGLISH: And I will contend
25 that the lighting industry already is making a lot

1 of progress.

2 COMMISSIONER ROSENFELD: Agreed.

3 CEC PROJECT LEAD FLAMM: Okay, thank
4 you. I'd like to move on, and our next
5 presentation will be on parking lot lighting and
6 it will be presented by Jim Benya.

7 CONSULTANT BENYA: Okay. Parking lot
8 lighting: Parking lots are an obvious opportunity
9 for being regulated under the Title 24 system.
10 They're relatively straightforward lighting energy
11 zones, notwithstanding. So under this measure
12 proposed, Title 24 would include lighting parking
13 lots. Lighting in parking lots would be required
14 to be designed within lighting power density
15 limits, very similar to interior lighting.
16 Maximum power densities would be permitted,
17 according to the four zones.

18 We may base, based on a discussion we
19 had this morning, lighting power densities would
20 be based on new illumination levels set by the
21 IESNA according to the ETAL procedure. If not, as
22 a fallback position we will use the existing IESNA
23 recommendations and grow into the ETAL-based
24 values when they become available. And the
25 standard will also include lighting control

1 requirements for both day and curfew illumination.

2 The idea is to, of course, save electric
3 energy and demand. Obviously, during the day it's
4 a demand illumination, as well as energy. At
5 night one would -- we often hear that the curfew
6 period is probably going to be during the lowest
7 point in the utility peak. It certainly saves
8 energy, demand is usually not as major of an
9 issue, with regard to what we think parking lot
10 controls are going to relate to.

11 Enforcement mechanism would be
12 implemented as part of Title 24. You would take
13 the square footage of the parking lot, according
14 to your site plans, and multiply that times your
15 allowed lighting power density and you would get
16 an allowed power for lighting the parking lot.

17 It may include mandatory shielding
18 requirements. We may have requirements for some
19 form of cutoff illumination. That, as you can
20 guess from the conversation we just had, is we're
21 not quite sure about that, it's a little bit of a
22 sticky wicket.

23 It may include lighting controls that
24 differ according to the environmental zones. In
25 other words, there may be some specific

1 requirements that might be different in
2 environmental zone E1 from, let's say, E4. This
3 may have to do with security and other related
4 issues. We haven't talked about security much
5 here today, but I think a lot of people would
6 agree that one of the reasons why we like parking
7 lots, as someone said earlier, I think it was
8 Mike, was because we're concerned about being
9 mugged on the way to and from our car. And
10 depending upon the environment, depending upon the
11 type of institution and so on, this may be an
12 important issue.

13 The regulatory approaches would be a
14 watts per square foot of lighted uncovered parking
15 lots, lighted being a very important word here.
16 We had quite an interesting discussion about,
17 because, of course, every time you develop a
18 standard such as -- particularly in the Title 24
19 process, you worry about people who will find the
20 loopholes and game the standard. And we talked
21 specifically about how one who has a large site
22 might say, well, I've got a parking lot and I've
23 got a parking lot, so I get, let's say, .2 watts
24 per square foot for my parking lot, so I'll get
25 that times, you know, 20,000 square foot of lot,

1 but I'll only light 10,000 square foot of lot with
2 all that wattage.

3 In interior lighting, you can do that,
4 because we have this presumption you're going to
5 need light in every room. But in exterior
6 lighting, particularly in parking lots and Nancy,
7 in our discussion, made a good example of how, at
8 her daughter's high school, they have the faculty
9 lot, which is illuminated, and the student lot,
10 which isn't. And you might have the football
11 field lot, which isn't. And yet, if we're not
12 careful in how we deal with this, we might have
13 situations where all of that wattage were
14 permitted for one.

15 Lighting controls: Again, we've talked
16 about this before, how lighting would be off
17 during the day and possibly having curfew
18 regulations as well.

19 Equipment specifications: This is where
20 the discussion about shielded luminaires has come
21 up several times. Since we just had this
22 discussion very thoroughly five minutes ago, I
23 think I'll move on.

24 Illuminance levels: This is a very
25 controversial area of our discussion, because some

1 members of the team feel that having maximum
2 illumination levels specified in Title 24 may be
3 of value. And the reason is, is that we're very
4 concerned that if people create excessive
5 illumination levels for whatever reason, using --
6 however they manage to do it, we would start to
7 run into those pesky adaptation problems we were
8 talking about earlier.

9 And so there is some concern that if we
10 don't have maximum illumination level restrictions
11 somehow in the standard, that someone adjacent to
12 the property that's being designed may be able to
13 create a visual problem, and then the watts being
14 provided for the site won't be available to
15 overcome them.

16 Performance verification that the
17 inspecting authority would have to deal with:
18 First of all, if we do have luminaire shielding
19 requirements, they would have to verify them.
20 Secondly, controls calibration is always an issue.
21 If we're talking about a curfew period, the big
22 question is does the system really turn the lights
23 off at midnight or whenever the curfew time
24 begins? And ensuring that security lighting is
25 only energized during those designated hours where

1 security is a legitimate issue.

2 How many times have you driven by a
3 parking lot of a building that is totally
4 unoccupied, and the entire parking lot is
5 illuminated? It's a very, very common situation,
6 and it's one of the reasons why the governor
7 signed the order a year or so ago. That's one of
8 the things that the standard ought to deal with.

9 Cost-effectiveness: The models that
10 we're going to be using may develop those maximum
11 lighting power densities using the ETAL
12 procedures. If they don't, they will use the
13 existing IESNA standards for parking lots. There
14 will be limits on disability and discomfort glare
15 considered for each model. In other words, this
16 gets back to the question of might we have some
17 sort of restriction on either the angle of
18 distribution of luminaire, like Cheryl brought up,
19 or might we be talking about limits on how much
20 adjacent illumination may be available on a
21 particular property?

22 Sort of to summarize on this, it should
23 be a pretty straightforward process. We expect
24 this one not to be very hard. We expect it to be
25 the only issue being the four lighting energy

1 zones. Bill is going to have me saying that for
2 the rest of the day now, I hope. And hopefully
3 this one people will find, yeah, that makes sense.
4 It's kind of like what we've always been doing,
5 okay, I can buy into that one. I don't see it as
6 being that controversial with the exception of the
7 shielding issues and the possibility of maximum
8 illumination, which relate to some of the ETAL
9 procedures.

10 So, in summary, I'd say this one I feel
11 very comfortable about proposing, and I think this
12 is certainly something that we can do relatively
13 quickly. And even if we only have to deal with
14 one footcandle level value for now, the ETAL
15 procedure doesn't bear fruit for three years, we
16 can still implement this.

17 CEC PROJECT LEAD FLAMM: Comments,
18 questions?

19 SPEAKER FERGUSON: John Ferguson with
20 Holophane. Will you be addressing the vertical
21 lighting levels in the parking lots compared to
22 just the horizontal or watts per square foot?
23 Because in a parking lot, all you're going to see
24 is if you see a car or person, you're seeing the
25 vertical surface. So will they be addressing

1 that, or --

2 CONSULTANT BENYA: The models that we
3 will build to determine the watts per square foot
4 will be based on IESNA recommendations for
5 horizontal and vertical illuminance.

6 SPEAKER FERGUSON: Okay.

7 SPEAKER AHMED: A. Y. Ahmed, consultant,
8 Southern California Gas.

9 I just have a generic question. Will
10 there be any possibility of tradeoff between
11 interior lighting and exterior lighting?

12 CONSULTANT BENYA: Our team not only
13 doesn't recommend any tradeoffs between interior
14 and exterior, which 90.1-99 also prohibits, we are
15 somewhat reticent to even permit tradeoffs between
16 areas of the site.

17 So, in other words, you are given 10,000
18 watts for parking lots and 3,000 watts for
19 canopies and 2,000 watts for your facade, we're
20 somewhat reticent to allow you to trade any of
21 those off either.

22 CONSULTANT ELEY: Well, another way to
23 put it is we some of the exterior lighting
24 allowances we see sort of as use it or lose it
25 kinds of balances, which is another way to say you

1 can't have tradeoffs.

2 SPEAKER AHMED: And the reason I ask
3 this question is for marketing and merchandising
4 reasons. Customers might like to do that. In
5 other words, say, Walmart might like to overlight
6 the parking lots in order to attract customers,
7 and sacrifice some of the interior lighting.

8 CONSULTANT ELEY: That's one of the many
9 issues we're going to deal with in the standard.

10 SPEAKER AHMED: Okay.

11 CONSULTANT ELEY: And that's one reason
12 why the lighting zones begin to -- lighting energy
13 zones? I think that's why they kind of begin to
14 make sense, because that's not an issue in every
15 application but it certainly is in some.

16 CEC PROJECT LEAD FLAMM: John?

17 SPEAKER HOGAN: John Hogan, City of
18 Seattle. Jim, I realize that the calculations
19 haven't been done yet. The 90.1 values for
20 parking lots are .12 watts per square foot for
21 private and .18 for public parking lots.

22 Do you have any sense where the range of
23 values might turn out in this analysis? And if
24 you don't, do you have fixed variances from
25 Yosemite or from lots that you've done to give a

1 range of your experiences? So without having to
2 put those in the model, what would you have done
3 for a good lighting design?

4 CONSULTANT BENYA: Well, first of all, I
5 reviewed the calculations that were posted on your
6 web site for your proposed changes to the Seattle
7 energy code, and they will be very, very similar
8 to that, to the work Mike Lane did in particular.

9 I don't know whether they will be more
10 or less extensive, but they will be very similar
11 in nature. So you're going to recognize them when
12 you see them.

13 CEC PROJECT LEAD FLAMM: Pat?

14 SPEAKER SPLITT: Pat Splitt, APP-TECH
15 again. Just another thing I've come across in
16 doing some lighting design is on an existing
17 parking lot area or parking roadway area, like
18 that winds around a lot of the places in Silicon
19 Valley where there are a lot of existing trees,
20 some fixtures and poles might even be totally
21 useless because of where they're located. But
22 these cities, some of them also have ordinances
23 regarding heritage trees or when you can't trim or
24 cut trees, where you might be precluded from just
25 doing a design as if there was nothing there or

1 that you could cut down the trees.

2 And there must be some way in those
3 instances of getting a satisfactory lighting
4 retrofit and still meet these other restrictions
5 on what you can do about the existing trees. So
6 maybe it needs to be an exception.

7 SPEAKER BAUER: Yeah, Bernie Bauer with
8 Integrated Lighting, lighting consultant out of
9 Southern California. From the one standpoint,
10 Jim, you mentioned that the safety and security
11 which I think is paramount and probably one of the
12 main reasons we light lots, and I'm assuming your
13 models, if they follow IES guidelines, will also
14 take that into account.

15 CONSULTANT BENYA: Actually, the reason
16 why the ETAL procedure, even the meeting at which
17 the ETAL procedure was developed was called, is
18 because IESNA standards for the same areas are
19 different, depending upon which publication you
20 read currently. And there is -- Some of these
21 standards have scientific basis and many of them
22 don't. The ETAL procedure has been proposed as a
23 universal scientific basis.

24 Here's the problem in a nutshell: If we
25 are going to do an excellent job in developing

1 Title 24 standards for anything, we've got to be
2 very sure that you achieve the necessary
3 visibility, safety and security from that solution
4 on which we base our models. The biggest problem
5 we have in the industry is people tend to, as I
6 said before, there is a creep that occurs where
7 people say, well, if one is good, two is better.
8 And the problem is if one is enough, then that's
9 what we should be setting the standard at.

10 SPEAKER BAUER: Yeah, see, you answered
11 basically what I -- The other part of what I had
12 was you had mentioned and someone else said about
13 tradeoff. I can see one possibility where there
14 can be exterior tradeoff where it seems to me it
15 would be logical, and that would be to do an
16 approach on a full lighting site, as you would in
17 a tailored approach, where, let's say you have a
18 parking structure that's very integral with
19 building structure, and you have significant
20 facade lighting and so forth, there's actually a
21 synergy that takes place there. Either that
22 synergy can be positive or negative.

23 It can be positive from the standpoint
24 that well-designed facade lighting can help
25 contribute to the close adjacency in first rule,

1 let's say, of parking; likewise, a standard design
2 approach of luminaires that throws lights all over
3 the place actually is counterproductive and
4 wasteful in trying to create the lighting that is
5 both done for safety and security on the side of
6 this building, facade lighting, but also for the
7 aesthetic reason.

8 So it might be something to consider
9 that we have in the exterior site design approach
10 the same thing as a tailored method we have for
11 more complex interior, that a complex exterior
12 site might have that design approach with some
13 possibilities of tradeoffs.

14 CONSULTANT BENYA: That's a good point,
15 it's an extremely good point and one we -- The
16 current thinking of the team here is that because
17 we have these interface or slopover areas,
18 whatever you want to call them where, you know, we
19 don't have partitions between the parking lot and
20 the building walkway. We don't have partitions
21 between the building facade and the building
22 walkway in the parking lot. So we don't have any
23 lights controlling partitioning, in other words.

24 And we recognize that as sort of a
25 problem area. And the points you bring up are

1 excellent, because, as you and I both know, those
2 could be really good design practices, to bounce
3 some light off the building and light the front
4 row of a parking lot, etc. We're going to take
5 that into account.

6 The most likely result, if I can put on,
7 you know, look into this crystal ball for a
8 second, is you'll be given, like in the tailored
9 retail method that I think you know pretty well,
10 there is going to be a base amount that you're
11 permitted, and then for vertical surfaces and
12 other elements that you can justify a need for,
13 you'll be allowed a certain power density for
14 those surfaces, on a use-it-or-lose-it basis.

15 And then you put them all together and
16 you've constructed what you were just describing.
17 That's probably what's going to happen.

18 SPEAKER BAUER: Thank you.

19 CEC STAFF SHIRAKH: Another question,
20 please.

21 SPEAKER MILLER: Rick Miller with HOK.

22 There have been several references to
23 shielded luminaires. If I look through a
24 manufacturer's catalog and I see luminaires, then
25 at the back of the catalog there are usually

1 accessories called shields. Would this imply all
2 luminaires have to have these accessories?

3 CEC PROJECT LEAD FLAMM: Anybody want to
4 answer that one?

5 CONSULTANT HESCHONG: I would say that
6 that question is premature, because we don't know
7 how we're going to define this at this point. I
8 mean, it's certainly something to take into
9 consideration, and I think it should be part of
10 the evolution of where we go. But we don't have
11 that answer for you right now.

12 CEC PROJECT LEAD FLAMM: Question?

13 CEC STAFF SULEIMAN: Adel Suleiman with
14 the Energy Commission. Is there a proposal for
15 controls to determine which ballast or lamp is out
16 in the parking lot? It could be, like, 40 or 50
17 light fixtures or poles out there, and the service
18 technician can come in and turn everything on for
19 days, for like three, four days, to fix and repair
20 these -- replace those ballasts and lamps.

21 Is there a proposal to determine this?
22 Maybe this has already been addressed, I'm not
23 sure.

24 CEC PROJECT LEAD FLAMM: I think that
25 the difficulty is, is we enforce standards with

1 the building inspection process right now, and it
2 sounds like what you're talking about is after the
3 fact. And I don't know that we have a regulatory
4 method to deal with that.

5 CEC STAFF SHIRAKH: Well, an indirect
6 way of addressing that is, for instance, in the
7 exterior lighting, we have separate controls for,
8 say, display lighting, general lighting. And
9 that's -- the intent is exactly that. If the
10 maintenance person comes in and wants to do
11 something, they don't have to turn all the lights
12 on at the same time.

13 So that may indirectly address what
14 you're suggesting.

15 CEC STAFF SULEIMAN: That's true, but
16 almost nine out of ten contractors out there, they
17 turn everything on, and that drives the peak. You
18 know, during -- these repairs have been during
19 peak, usually, so it's just a concern.

20 CEC PROJECT LEAD FLAMM: Okay.

21 SPEAKER SPLITT: Didn't mean to come
22 back, but mentioning tack-on shields brings up
23 roller-shades to me. It seems to me if you're
24 going to allow them to take credit for something
25 they just can hang on the fixture until it's

1 signed off, they'll just take them all off
2 afterward and take them to the next project, and
3 those same things will just be used over and over
4 again.

5 CEC STAFF SHIRAKH: If I may comment on
6 that, again going back to interior lighting, when
7 we specified LPD, that almost dictates people to
8 design their space to certain specifications;
9 otherwise, they're not going to get the amount of
10 lumens they want where they want it. So that
11 logic applies to exterior lighting as well.

12 And if you don't have proper shielding,
13 you're just not going to get the light where it's
14 supposed to be, and you're going to end up
15 underilluminating the space. So that might become
16 part of the controlling of what type of a design
17 or what type of fixtures they will choose to
18 properly illuminate the space.

19 CEC PROJECT LEAD FLAMM: Okay. I'd like
20 to move on, if that's okay with everybody.

21 Let's go to Building Ground Lighting,
22 and again Jim Benya is going to make that
23 presentation.

24 CONSULTANT BENYA: You know, if it seems
25 like I'm just lucky in getting to do all of these

1 presentations, it's because Nancy, that rat, went
2 to Paris for a week --

3 (Laughter.)

4 CONSULTANT BENYA: -- so I get to do her
5 stuff too, you know. But I know, somebody has got
6 to do it.

7 Building grounds lighting includes
8 lighting for landscape, pedestrian walkways,
9 patios and other area lighting. What's in
10 building grounds? Well, you know, it's everything
11 that isn't a parking lot, isn't a driveway, and
12 isn't a building entry or an entrance, in other
13 words, entrance or exit, rather. And so there are
14 a number of things that could be in it.

15 This is very similar to my just recent
16 discussion about parking lots. We see it as there
17 being a lighting power density value. There may
18 be max -- Well, there would certainly be maximum
19 lighting power densities that are allowed,
20 according to our four lighting zones, that the
21 lighting power density models would be based on
22 the ETAL procedure, if it's available. And we may
23 consider lighting controls during the day and
24 curfew periods for this type of lighting, which
25 all, of course, of you probably by now figure

1 seems kind of natural.

2 The idea is to save electric energy and
3 demand. There is a reasonable amount of exterior
4 lighting that occurs, landscape lighting, lighting
5 along walks and things like that, that are not
6 part of the public right of way. And this is a
7 very important distinction. Now we're starting to
8 talk about sidewalks and walkways and bikeways and
9 things like that.

10 If it's part of a private property, it's
11 not part of the public right of way that is part
12 of this discussion. We will be having a
13 discussion later concerning the public right of
14 way; it's a little bit different there. Here
15 we're concerned about the bollards that are
16 leading up to the building and the walkway lights
17 and things like that, and again, being left on at
18 inappropriate times, either during the day when it
19 adds to peak, or being left on after its useful
20 period at night.

21 It would be implemented as part of the
22 Title 24 building efficiency standards. It may
23 include mandatory shielding requirements, as
24 discussed before. It may include lighting
25 controls, including curfew and daytime

1 restrictions, and would have a prescriptive
2 requirement that might set maximum lighting power
3 density limits.

4 How would you verify performance? The
5 inspecting authority would be looking for, first
6 of all, the lighting controls and any luminaire
7 shielding requirements we might have. Secondly,
8 the inspecting authority would be looking for
9 lighting controls that are set appropriately for
10 the times, and making sure that the security
11 lighting is only energized during those
12 appropriate hours.

13 The models will be assessed on their
14 cost-effectiveness. We will develop maximum
15 lighting power densities based on cost-
16 effectiveness models similar to all the work that
17 we do, and we will again be using the fullback
18 position. If we're unable to get ETAL model
19 information fast enough, we'll be using existing
20 IESNA standards to build the models.

21 You know, this whole -- You're going to
22 see this response over and over again now. Here
23 we're talking again about the limits on disability
24 and discomfort glare that may be assumed for each
25 model, and this gets down to some of the issues we

1 were talking about, with cutoff and glare and some
2 of the other things. If the ETAL models are
3 available, it will be taken seriously into
4 account; if not, we'll only be taking into account
5 as much as is reasonable.

6 Hopefully a lot of these will go quickly
7 now, because they all look the same, and the
8 issues tend to be the same in a lot of these too.

9 CEC PROJECT LEAD FLAMM: Comments and
10 questions? Oh, I was going to say great job, Jim.
11 We've got one question.

12 CONSULTANT AHMED: A. Y. Ahmed,
13 consultant. The question was is this going to be
14 done on gross square footage of the area around
15 the structure, or is it going to be based on, say,
16 per lineal feet of the walkway and things like
17 that?

18 CONSULTANT HESCHONG: That's a very good
19 question, and that is exactly what we need to
20 address. It's not clear at this point. There are
21 a number of different proposals that have been
22 floated. I don't think any of us are satisfied
23 with the proposals.

24 The biggest distinction that the CEC
25 team has made so far is the difference between

1 illuminated area and non-illuminated area, that
2 there would be -- the allowance would not be based
3 on the size of the property. The allowance would
4 be based on the illuminated area.

5 Well, there the devil is in the details:
6 How do you define illuminated area? And I think
7 we're very interested in comments on what should
8 be counted as illuminated area? What would make
9 it easy for building officials to check what area
10 applies, what area doesn't apply? Should it be
11 the hardscaping, should it be an illumination
12 criteria? Very good question.

13 CONSULTANT AHMED: The next question was
14 on since it's going to be incorporated in
15 Title 24, is it also going to cover residential
16 homes? Exterior lighting for residential homes?

17 CONSULTANT ELEY: I think there will be
18 some outdoor lighting requirements. Those are
19 actually being developed as part of another
20 proceeding, the porch lights and things like that,
21 yes.

22 CONSULTANT AHMED: Will the ETAL method
23 be used for residential?

24 CONSULTANT ELEY: We don't anticipate
25 that ETAL would be used for those, since they're

1 already under development and other techniques are
2 being used.

3 CEC STAFF SHIRAKH: Okay. We are
4 considering residential lighting as part of the
5 2005 building standards, and there are several
6 proposals on the table, some of which deal with
7 exterior lighting, so there may be new provisions
8 for that, but it would not be part of this
9 proceeding.

10 CONSULTANT AHMED: Okay.

11 CEC PROJECT LEAD FLAMM: Question in the
12 back here?

13 BUILDING STANDARDS REP POSSELT: I'm
14 Stuart Posselt with the California Building
15 Standards Commission. Not so much of a question,
16 but of an alert: By statute, the Division of the
17 State Architect and the Building Standards
18 Commission adopted standards for lighting of
19 parking facilities and primary walkways at
20 California state universities, colleges and
21 community colleges.

22 And I just ask you to respect those
23 requirements. They're purely for safety reasons.
24 The law was implemented due to an incident on a
25 campus, and it establishes lighting levels

1 irrelevant of ETAL or whatever else there is.

2 CEC STAFF PENNINGTON: Could I ask you a
3 question about that?

4 BUILDING STANDARDS REP POSSELT: Sure.

5 CEC STAFF PENNINGTON: You said it was
6 adopted by statute?

7 BUILDING STANDARDS REP POSSELT: There
8 was a statute, there was a law passed. It
9 required the Division of the State Architect to
10 adopt some lighting standards for these walkways.

11 CEC STAFF PENNINGTON: Okay. So adopted
12 by regulations.

13 BUILDING STANDARDS REP POSSELT: Right.
14 They adopted part --

15 CEC STAFF PENNINGTON: Do you know what
16 part of Title 24 those regulations are in?

17 BUILDING STANDARDS REP POSSELT: 4A.

18 CEC STAFF PENNINGTON: Part 4A.

19 BUILDING STANDARDS REP POSSELT: Right,
20 Chapter 4A within the California Building Code.
21 It's Part Two.

22 CEC STAFF PENNINGTON: Do you have a
23 reference I could look at there?

24 BUILDING STANDARDS REP POSSELT: I have
25 the copy of it.

1 CEC STAFF PENNINGTON: I could do it
2 offline here.

3 BUILDING STANDARDS REP POSSELT: I can
4 give you this copy.

5 CEC PROJECT LEAD FLAMM: Thank you.

6 BUILDING STANDARDS REP POSSELT: I have
7 a copy of the statute, not with me, but if you
8 want it, I can also get that to you.

9 CEC STAFF PENNINGTON: Thank you.

10 CEC PROJECT LEAD FLAMM: Okay, moving
11 on.

12 SPEAKER MELNYK: Oh, Jack, one quick
13 point. In talking about the light thresholds for
14 the outdoor area lighting, you might use as a
15 benchmark some multiple or bright moonlight. You
16 know, consider that, you know, that's a level
17 that's reasonably well known: .02 footcandles
18 versus nothing. I mean, that's the borders of the
19 illuminated space is what I'm getting at.

20 CONSULTANT BENYA: This is Jim. You
21 know, we talked more in terms of something that's
22 more easily enforced. Because, you know, one of
23 the things that this team, and I want to stress
24 this to all of you, is that this team has got, you
25 know, probably well over a hundred years' of

1 experience in the enforcement of Title 24 from
2 several different points of view. And we're all
3 familiar with the gaming and some of the loopholes
4 and other issues that we've learned how to deal
5 with and close over the years.

6 And we're also very concerned about the
7 building officials and their ability to take a
8 look at a set of plans, find problems, identify
9 them easily, mark them up, require corrections and
10 move on. We don't want to create something that
11 is a bureaucratic or just an impossibility in the
12 way of a problem.

13 So everything we -- We have that
14 discussion all the time, and the discussion right
15 now centers on taking some multiple of the height
16 of the closest luminaire, as being a practical --
17 In other words, the area must be within, let's
18 say, three mounting heights of the closest
19 luminaire to be considered to be illuminated. And
20 then if it's illuminated, you get to count the
21 area of the parking lot that is illuminated kind
22 of thing.

23 SPEAKER FERNSTROM: Gary Fernstrom,
24 PG&E. I'm fascinated by the terminology
25 opportunities associated with that. We could have

1 three moons, five moons, it would be great.

2 (Laughter.)

3 CONSULTANT ELEY: Thanks for that comic
4 relief there.

5 SPEAKER MELNYK: One of the points I
6 wanted to make is that bright moonlight and
7 multiples thereof, maybe twice bright moonlight, I
8 used in some what are mostly anecdotal
9 recommendations for rewriting code for one of the
10 cities that I was asked to provide comments on.

11 And the enforcement of it, in my
12 recommendation, was not at the permitting. It was
13 upon someone challenging whether there was
14 sufficient light or not. And that is I
15 specifically said send an LC out, you know, or
16 have an LC available to your city to, you know,
17 adjudicate situations like that. That's where I
18 used the .02 footcandles.

19 CEC PROJECT LEAD FLAMM: Okay. Thank
20 you, Jack. I'll remind everybody to state your
21 name as soon as you get up to the microphone.

22 I'd like to move on to Building Entrance
23 and Exit Lighting. Lisa?

24 CONSULTANT HESCHONG: So the proposal
25 here is that there may be -- it's not

1 predetermined, but there could be a separate
2 category of requirements for building entrances
3 and exits. This set of slides is basically very
4 similar to what Jim has gone through on the other
5 two. What I want to do is highlight a couple of
6 the key issues relative to building entrances and
7 exits.

8 The assumption is that coming into or
9 leaving a building is a critical task and that
10 there may be a higher criteria standard for
11 illuminance in those areas. In the past IES has
12 defined allowances for entrances and exits as the
13 linear feet of the door opening. We are
14 considering defining it instead as a square
15 footage, which would be a function of the door
16 opening times a dimension, simply so that that
17 square footage allowance is more compatible with
18 the rest of the other square footage allowances.

19 One of the challenges in looking at
20 these different types of areas is how they
21 possibly could be either additive or exclusionary
22 to other areas. So, for instance, with building
23 entrances and exits, we've also proposed a
24 definition of a building canopy. Canopies are
25 usually at entrances and exits, so would the

1 entrance allowance be in addition to the canopy
2 allowance or would it be an exclusion of the
3 canopy allowance.

4 Similarly, what Jim just talked about,
5 lighting for pathways. Well, pathways tend to
6 lead to building entrances and exits. So what are
7 the limits between those two? What are the
8 definitions of where one applies and where the
9 other applies? And that's what we're going to be
10 looking at primarily in these definitions, not
11 only in determining the lighting power densities
12 and the control requirements and so on, but how
13 you define the lines between one category and
14 another.

15 I think that pretty much covers it.
16 Everything else that Jim has talked about in terms
17 of differential, lighting power densities,
18 according to environmental zones, the use of ETAL
19 procedure to determine an appropriate illuminance
20 level to set the lighting power densities,
21 assuming a certain level of efficiencies, all of
22 that applies. Again, there may be potential for
23 controlling glare sources or cutoff angles,
24 dependent on if there's a way to do that
25 appropriately.

1 All that is basically on the table and
2 certainly hasn't come anywhere close to a
3 decision. So I think I could open it to questions
4 with that point.

5 CEC PROJECT LEAD FLAMM: Questions,
6 comments? John?

7 SPEAKER HOGAN: John Hogan, City of
8 Seattle. I think the issue you raised about these
9 multiple categories suggests a complexity that
10 maybe you don't need to go that far. You know,
11 there's the category for entrances and exits,
12 there's under canopy, and let's take gas station
13 canopies aside, but, you know, lots of small
14 retail buildings have an overhang, maybe more for
15 weather protection or sun protection, so are you
16 going to give them credit for having that where
17 they get more light?

18 And then there's the facade lighting
19 category. And it seems if you can consider all
20 that in your analysis but come up with one set of
21 recommendations that, you know, that people can
22 choose to use it and they can put it all at the
23 entrance or they can spread it around underneath
24 the canopy, and rather than making it a complex
25 thing for both designers and building officials.

1 CONSULTANT HESCHONG: Your suggestion
2 would be to reduce the number of categories.

3 SPEAKER HOGAN: Yes.

4 CEC PROJECT LEAD FLAMM: Thank you.

5 CONSULTANT BENYA: Let me ask you a
6 question about that, John, if I could. Are you
7 suggesting that maybe we might isolate canopies to
8 particularly canopies that are at issue, you know,
9 and sort of disregard other things that might be
10 canopies but, you know, aren't necessarily
11 lighting problems?

12 SPEAKER HOGAN: Yeah, I would take
13 standalone canopies and put those standalone, off
14 to the side somehow, as opposed to, say, gas
15 station canopies.

16 CONSULTANT HESCHONG: I will disagree
17 with you there as an architect and designer, that
18 there are a lot of situations -- porte cocheres,
19 entrances to buildings -- where there is
20 significant covered area, again, applying higher
21 intensity of use. And also, a very different
22 lighting design condition than there is for simply
23 open space.

24 There are a lot of other reasons that we
25 cover outdoor areas besides just gas station

1 canopies that probably need to be addressed.

2 SPEAKER HOGAN: Sure.

3 CONSULTANT HESCHONG: But that's sort of
4 jumping ahead to the canopies discussion.

5 SPEAKER HOGAN: Sure. In the Seattle
6 and Washington State energy codes, there is an
7 exterior lighting allowance for buildings and
8 entrances and exits and canopies which you have
9 your choice between 7.5 watts per lineal foot of
10 perimeter or .25 watts per square foot of facade
11 that's eliminated, and so people -- if you have a
12 lower building, you use the 7.5 watts per lineal
13 foot. At four feet that's 30 watts. It lets you
14 put in a single lamp fluorescent if you wanted to
15 or space that out or highlight it at more the
16 doors and stuff.

17 CEC PROJECT LEAD FLAMM: That gentleman
18 right there. I'm sorry, I forgot your name.

19 SPEAKER MILLER: Rick Miller with HOK.
20 The reference here is on entrance lighting and on
21 exit lighting. Exit brings up the subject of
22 egress. Egress lighting is required by code to be
23 a minimum of one footcandle. Some building
24 officials interpret that egress lighting of a
25 minimum of one footcandle to extend all the way to

1 the public right of way, which may include a
2 substantial portion of exterior.

3 Would this be addressed?

4 CONSULTANT HESCHONG: I think that's a
5 very good question, and one of the discussions in
6 the group that has come up is distinguishing
7 between different types of pathways. And whether
8 we need to adopt a regulation that would identify
9 an egress pathway or some other legally identified
10 pathway as distinguished from just any sidewalk
11 that you want to put into building grounds, so I
12 appreciate bringing that up.

13 CEC STAFF PENNINGTON: Could I ask you a
14 question, sir?

15 SPEAKER MILLER: Yes.

16 CEC STAFF PENNINGTON: You'd need to
17 come back up to respond.

18 Have you seen a state agency interpret
19 the code to be all the way to the right of way,
20 and is that a formal written interpretation?

21 SPEAKER MILLER: I have not seen a state
22 agency, I have seen local city building officials
23 interpret that way.

24 CEC STAFF PENNINGTON: There are some
25 other -- Are people saying state agencies?

1 CONSULTANT HESCHONG: Minnesota.

2 CEC PROJECT LEAD FLAMM: California.

3 CEC STAFF PENNINGTON: Well, that

4 doesn't count.

5 CONSULTANT BENYA: State of California.

6 CONSULTANT HESCHONG: I mean, because

7 that comes from --

8 CONSULTANT BENYA: We can't get you on

9 the record from there.

10 So what I'm hearing is not California

11 state agencies --

12 CONSULTANT HESCHONG: No.

13 CONSULTANT BENYA: -- is that correct?

14 SPEAKER MILLER: I have not seen -- I

15 have seen local city officials.

16 CONSULTANT BENYA: Thank you.

17 CEC STAFF PENNINGTON: You know, we do

18 have a history in Title 24 of excluding or

19 exempting lighting loads that are required by

20 other statutes. I don't see that as a major issue

21 here. You know, it's a good point because I have

22 experienced the same thing, Rick, and it's

23 becoming more and more common that that is the

24 interpretation of the local building official, and

25 whereas it may not be the state building official

1 you don't want to fight with the local building
2 official, so you just do it.

3 And we may, you know -- But I think it's
4 simply exempted. I don't see that as a major
5 issue. You're talking about one footcandle along
6 a path leading to the right of way. And where
7 we're really going to run into problems, I want to
8 get back to the canopy versus exit discussion,
9 because I think if you can simplify this, and stop
10 and think about it for a second.

11 If this were a building and you could
12 magically put walls between the different types of
13 exterior spaces, and give each one a title -- this
14 is parking lot, this is walkway, etc. -- I think
15 you can pretty rapidly say, well, I've got to
16 assign something to each area as I look at the
17 plan. Which one am I allowed to choose, and I
18 pick the one that best fits it.

19 I don't think it's going to be that
20 difficult. I think the problem with the building
21 exit or entrance is the one that doesn't have a
22 canopy, which is what this really addresses more
23 than one with a canopy.

24 And for a canopy, let me throw out the
25 example of the hospital canopy over the entrance

1 to the hospital, both the emergency room and the
2 regular entrance. There is usually a relatively
3 large canopy. It's very important in terms of
4 protecting people coming and going, in wheelchairs
5 and what have you, and that is a real classic
6 example of a canopy that has work to do, needs
7 higher lighting levels under it, and when I bring
8 up canopies here in a few minutes, that's kind of
9 the way we have to look at it. I think when we
10 talk about entrances and exits here, we're talking
11 about where there is no canopy.

12 And, by the way, I think if you think
13 about it in plan view, given the fact you'd have a
14 choice if there's a door there, do you want to use
15 the canopy allowance or do you want to use the
16 entrance or exit allowance?

17 CONSULTANT ELEY: In San Francisco, a
18 lot of the buildings have, their entire floor is
19 set back 15 feet or so, so it's more than just an
20 entrance canopy, it's kind of a whole covered
21 area. I think that's what you were getting at,
22 Lisa, and we have to somehow address that
23 situation in these requirements, that, well as
24 it's not purely an entrance, it's more of a
25 covered walkway, I think.

1 CONSULTANT HESCHONG: Any covered area,
2 really.

3 CONSULTANT ELEY: Yeah, a covered area,
4 right.

5 CEC PROJECT LEAD FLAMM: Okay.

6 SPEAKER BAUER: Bernie Bauer again, from
7 Integrated Lighting. Just one word of caution
8 that would run through the whole thread as we deal
9 with exteriors, you'll hear constantly let's make
10 it simpler and easier. Fortunately, up till now
11 we haven't done that with Title 24. Here a lot of
12 designers and engineers bitch and complain how
13 difficult Title 24 is to work with, and yes, it
14 can be at times.

15 But I work with codes throughout the
16 country and internationally, and Title 24 is still
17 one of the best lighting codes to work with, to do
18 the job that needs to be done and do it in a
19 professional manner. And to that extent, the
20 exterior lighting code needs to be as complicated
21 as it needs to be to have that same thing happen,
22 or as simple as it needs to be.

23 CEC PROJECT LEAD FLAMM: Thank you,
24 Bernie. Shall we move on?

25 Next is Building Facades. Jim?

1 CONSULTANT BENYA: Okay. Facades are an
2 interesting challenge, because not every
3 building's facade is illuminated. As a matter of
4 fact, a small percentage of buildings' facades are
5 illuminated. And, with the exception of the
6 proximity to a parking area or walkway or
7 something like Bernie pointed out earlier, they're
8 frankly, most of the time when you light a
9 building facade it's for some purpose, to attract
10 attention to the building, to demonstrate the
11 architecture of the building, to provide skyline
12 attention and things like that.

13 So most of the time when we're looking
14 at illuminating a building facade, per se, our
15 tendency is to look at it as with the exception of
16 those few cases, a lot of it has a marketing type
17 of role. I think it's very important to recognize
18 that throughout our discussions, everybody on the
19 team feels that marketability, marketing ability
20 to sell your property, demonstrate your property
21 and so on are well established and necessary. No
22 one is really saying, oh, we've got to stop that,
23 not at all, but there is a need to limit it.

24 We've had some very lively discussions
25 about cities where there is an excessive amount of

1 this sort of activity. One case in point is
2 Atlantic City and Las Vegas and places like that,
3 where the illumination of building facades is, you
4 know, I've seen buildings illuminated to 50
5 vertical footcandles. In the middle of the night,
6 that's pretty blatant.

7 So there is an understanding of the need
8 for this, there is an acceptance of the need for
9 this, and we feel that it fits within the
10 structure of Title 24, the way many things do,
11 particularly with respect to retail lighting. If
12 you're familiar with Title 24's interior retail
13 lighting standards, there is a very specific set
14 of use-it-or-lose-it provisions in the tailored
15 method, the tailored method which provides you a
16 base amount of illumination to do the things you
17 need to do in the space, then permits you to add
18 display lighting and other things, provided it's
19 separately controlled and provided you use it or
20 lose it, you can't use it for anything else, is
21 very well established history. It works well.

22 And so we're kind of thinking that
23 that's the way this is going to go. It's going to
24 be like everything else we talked about, there
25 will be the four lighting zones, there will be the

1 ETAL procedure and things like that. But the
2 biggest difference between this and what we've
3 talked about is chances are, number one, this will
4 be a use-it-or-lose-it type of provision, where
5 the wattage you're given you're only given for
6 building facade lighting, and two, part of the
7 discussion will be about, we think, maybe not even
8 providing any power allowance in some of the
9 lighting zones, particularly in E1.

10 So, in other words, if you have a
11 building in E1 zone, you might not be provided any
12 power for this particular activity. Let me see if
13 there's anything else.

14 Okay, it saves electric energy and
15 demand, yes. It's implemented as part of
16 Title 24. The same slides we've been going
17 through -- performance verification -- next slide.
18 Cost effectiveness will be proven, next slide.
19 That's it.

20 Well, we're trying to catch up. We
21 actually may even get there.

22 CEC PROJECT LEAD FLAMM: We're almost
23 there, we're almost there, yes.

24 CONSULTANT BENYA: So, you know, again,
25 to summarize, we saw an issue, a potential issue

1 amongst the people of the state of California
2 about, well, gee, I've got a building, I want to
3 light it up. Shouldn't I be able to? The answer
4 is yes, you should be able to.

5 But, like all the other discussions we
6 have, you may not be able to do it excessively.
7 You'll be having to be held within certain
8 reasonable limits, and you will be provided with
9 the power to do it, and there will probably be a
10 curfew on when you can do it. Again, by the
11 different lighting zones we've been talking about.

12 CEC PROJECT LEAD FLAMM: Lisa, do you
13 have a comment?

14 CONSULTANT HESCHONG: To continue on the
15 theme of what I was saying previously about the
16 entrance and exit zones, one of the key issues
17 here is going to be the definition of an
18 illuminated facade and the definition of the
19 square footage that applies to the lighting power
20 density that's allotted. And I see that as being
21 one of the key issues in this discussion, is how
22 those areas are going to be defined.

23 CEC PROJECT LEAD FLAMM: Okay. John?

24 SPEAKER HOGAN: John Hogan, City of
25 Seattle. Another key issue I would say is how to

1 determine what is an appropriate amount of
2 lighting we would allow, footcandles or whatever.

3 In the discussions that we've been
4 having recently in Seattle, there has been this
5 philosophy that you have a certain amount of
6 lighting for grounds, parking, all those things,
7 and should the exterior lighting, facade lighting
8 be higher than those. And the recommendation from
9 our group was actually it should be down at the
10 bottom. You know, whatever the lowest category
11 is, that's where the facade lighting should be.

12 When I look at 90.1, grounds are .10
13 watts a square foot, private walkways .10, public
14 walkways .15, private parking lots .12, public
15 parking lots .18, parking garages .2, and then
16 building facades is .25. So it's actually the
17 highest of all of the exterior lighting
18 categories.

19 Do you have any thoughts about whether
20 you would maintain this hierarchy that seems to be
21 implied here, that this is the most important
22 exterior lighting category and it should get more
23 light than any other category, or --

24 CONSULTANT BENYA: I don't think we know
25 the answer to that yet. I don't know. I have

1 asked for about seven years now to see the
2 scientific basis of the 90.1 values, and the
3 committee has yet to provide them to me. I don't
4 believe they have any. I think they pulled these
5 numbers out of the air for all exterior lighting
6 in 90.1.

7 And I've challenged them and I'm on
8 record with the 90.1 committee as saying you don't
9 have a scientific basis, you don't have a
10 standard. We're going to have to create the
11 scientific basis. And so that's our job is -- And
12 frankly, by the way, you know, I personally feel
13 that once we do these, these models should be
14 turned over to the 90.1 committee for their future
15 use, because there will be a scientific basis
16 that's traceable to IESNA standards for all of
17 these things.

18 The big question that this, of course,
19 brings up is how does the ETAL procedure fit into
20 this? Well, the ETAL procedure tells us that in
21 order to be able to see a building facade, you
22 know, maybe .1 footcandle is all we need to be
23 able to see a building facade. But I think a lot
24 of people would tell you, well, that's not enough
25 for you to see my hotel in downtown San Diego or

1 Mission Valley San Diego, where there's 20 hotels,
2 and I want you to be able to see mine. That's
3 probably where we're going to have the most
4 difficult discussion is in the non-scientific
5 intangible to a certain extent areas, where
6 marketing and recognition of the site and things
7 like that may even take precedence over some of
8 the more practical issues.

9 And I don't know where we're going to
10 come out, John. I really don't. But I do know
11 that within reason we will try and create that
12 scientific basis that 90.1 presently lacks, and
13 use it to come up with these numbers, one way or
14 the other.

15 CEC PROJECT LEAD FLAMM: Dawn?

16 SPEAKER DE GRAZIO: Dawn De Grazio of
17 Sacramento Municipal Utility District.

18 You touched on it for just a moment,
19 Jim. What I was going to ask about is if you use
20 the ETAL method, first you establish which
21 environmental zone we're in, then you use the ETAL
22 method to determine what the luminance of that
23 building facade should be, and then -- with other
24 things coming into play as you touched on. That's
25 the luminance, okay.

1 But how do you go from there to
2 illuminance, because, as we know, not all
3 buildings are the same. Some are going to be red
4 brick, some are going to be white stucco, and
5 others are going to be glass and are going to --
6 or have, you know, glass as mullions or, keeping
7 my own opinion out of it, brushed aluminum as we
8 have -- there's a -- I have to stop saying "we,"
9 referring to Minnesota because I'm here now, but
10 in Minneapolis there is a museum that is brushed
11 aluminum facade, not too far from downtown, and
12 everybody has got their own opinion of it, but it
13 does very interesting things when light bounces
14 off of it.

15 Okay, that's going to have a big effect
16 on whether this thing is going to fall into your
17 zone that you tried to establish it for or not,
18 and how much light -- to me, it seems like a round
19 and round reiteration process of determining how
20 much light can there be there, and not even
21 considering marketing issues.

22 CONSULTANT ELEY: Does ETAL even apply
23 to facade lighting?

24 CONSULTANT BENYA: Well, that's going to
25 be a real good question too. See, here is what I

1 think is going to happen with the facade lighting.
2 That's an extremely good point, and this is one of
3 the reasons why I've been questioning 90.1 and say
4 how the heck do you come up with a quarter of a
5 watt a square foot? Where did that come from?

6 Well, nobody seems to know the answer to
7 that. And I think this is going to be one of
8 the -- we've got a couple of other stinkers in
9 here too that aren't unlike this in the same way.
10 We know and we believe that the ETAL method,
11 within reason -- black glass buildings
12 notwithstanding, of course -- but within reason
13 are going to be able to tell us how much light we
14 need to see a particular task at what adaptation
15 level. That much we believe.

16 What we don't know is how much -- I
17 don't know if you ever studied, like, Blackwell's
18 work on visibility levels, but in Blackwell's work
19 on visibility levels, there was something called
20 VL1, visibility level one. That meant threshold.
21 That is the point at which you could just detect
22 your task. And then visibility level two,
23 visibility level three, visibility level four were
24 increases in contrast rendition that permitted you
25 to see your task better.

1 And at visibility level eight in
2 Blackwell's work, that was the point at which your
3 ability to perform the task was considered to be
4 the appropriate amount. In other words, you're at
5 the point of diminishing returns, where
6 significant increases in light beyond that would
7 not give you significant increases in visual
8 performance.

9 Well, based on that kind of concept, I
10 see us establishing an ETAL point for adaptation
11 that is some level. But we can translate into
12 watts per square foot of facade, using the
13 existing methods. That's not hard. The hard part
14 will be how do we say what is appropriate above
15 that for the marketing, retailing, merchandising
16 of the facility.

17 And that's going to be probably one of
18 the most difficult things, along with three or
19 four others in this process, we're going to have
20 to deal with. We may end up, frankly, going back
21 through the IESNA to the various application
22 committees and look for some more direction on
23 that, and bring it forth at the next hearing and
24 say here is how we got there. We know we're going
25 to have to do that.

1 We may end up just having to do that.

2 This may be a judgment call where we will be
3 asking the IESNA committees to give us that
4 information. We ourselves aren't going to pull it
5 out of the air.

6 CEC PROJECT LEAD FLAMM: Jack Sales.

7 SPEAKER SALES: Jack Sales, IDA. A
8 couple of points: Perhaps you might want to have
9 a different lighting power density for top-lit
10 versus bottom-lit facade. I can see where if it's
11 top-lit, the energy is going to use down at the
12 walkway or in an area where we really want to use
13 the light. But if it's bottom-lit, it could very
14 well be that half the light is going to waste or
15 the energy is going to waste.

16 Another point, kind of back to the
17 parking lot issue, is I would certainly like to
18 see Walmart market their product, that being their
19 facade or the front of their building, as opposed
20 to marketing used cars. So I'd rather see the
21 parking lot be a little lower, and perhaps full
22 cutoff, if you will, at least not have the sparkle
23 and the attraction to the parking lot. The
24 standard thing in lighting design is to attract
25 the eye to the product. The product for Walmart

1 is not in the parking lot.

2 CEC PROJECT LEAD FLAMM: Thank you.

3 SPEAKER DAVIS: Leslie Davis with
4 Auerbach and Glasow. We certainly would support
5 the allowance, within reason, of facade lighting,
6 and I mention this specifically with respect to
7 the downtown urban planning changes to revitalize
8 downtown cities.

9 We're involved right now with the city
10 of San Jose, and they're trying to revitalize and
11 bring people back to the downtown area, lighting
12 up the museum, the San Jose Museum of Art facade
13 is one of those tasks that we're involved in
14 looking at right now. And we feel that this is a
15 very good and needed area in terms of urban
16 planning.

17 So we think that the ETAL would address
18 those issues by looking at urban environments
19 differently than some of these special E1-type
20 zones, and so we'd encourage that work to continue
21 along that area.

22 Similarly, this would affect our entries
23 and exit ways. If we're talking about an urban
24 environment, again to go back to that building on
25 Market Street in downtown San Francisco, we're

1 coming right off of a public accessway, so we're
2 dealing with sidewalk lighting that may be part of
3 the public access and may not be mandated by these
4 codes.

5 If we're in a suburban campus for Apple
6 or Hewlett-Packard, we may have a parking garage
7 with a long-distance walkway between that garage
8 and the building entry, and so we have two very
9 different environments that right now we'd be
10 mandated to have the same kind of lighting
11 requirements. Again, the ETAL would address that
12 issue, and so we would encourage that to go
13 forward. Thank you.

14 CONSULTANT BENYA: Yeah, just in
15 response I just want to point out the latter was
16 an excellent example of why we have the lighting
17 zones. The former is a little bit trickier,
18 because to illuminate a building architecturally
19 as an attraction, which is certainly a very
20 important part of modern lighting in the urban
21 environment, the ETAL method is going -- you know,
22 there's a difference, as in retail lighting, for
23 example. You have 200 footcandles on certain
24 attractions or certain specimen displays, and then
25 everything else is at, you know, 30 to 50

1 footcandles.

2 Well, your displays are meant to draw
3 attraction to them and then, in turn, draw
4 attraction to the rest of the wares in the store.
5 And likewise, there's an analogy there, what
6 you're trying to do with exterior lighting on
7 certain buildings. Like I say, it's going to be
8 tricky, it's going to be tricky.

9 SPEAKER DAVIS: Just as a response to
10 that, the particular example that I used would
11 actually fall within guidelines that you're
12 discussing, so I don't see that as a concern, but
13 it is necessary to have some watts allowed as
14 opposed to saying we cannot light facades to
15 accomplish this. Even within the downtown
16 environment, within present guidelines, we would
17 be able to do the lighting on the facade and still
18 meet this proposed energy code.

19 SPEAKER SPLITT: Pat Splitt from
20 APP-TECH. With regard to exterior building
21 lighting, I was wondering if you've given any
22 thought to how you treat light pipes and fiber
23 optics, where, in fact, that which is on the
24 exterior of the building that's providing the
25 illumination uses no electricity.

1 And the light source could be contained
2 inside the building in a conditioned space, which
3 would not be regulated by your code. And, as far
4 as the regulations for conditioned space, it
5 wouldn't be regulated because it's providing no
6 light inside, so it's not a light source.

7 So it seems like there could be some
8 games played here, unless you think about this.

9 CONSULTANT ELEY: Sort of like the
10 restaurants that light the interior with soffitt
11 lights outside.

12 SPEAKER SPLITT: Yeah.

13 CONSULTANT HESCHONG: That's a very good
14 point. It also applies to the issue of signage
15 and billboards, sort of what's inside the
16 building, what's outside the building and how that
17 gets controlled.

18 CEC PROJECT LEAD FLAMM: Okay, thank
19 you.

20 Moving on to -- Oh, Dawn?

21 SPEAKER DE GRAZIO: I was just thinking
22 about your comment, and -- Dawn DeGrazio, SMUD.
23 It seems to me that if you're lighting a facade,
24 the facade is exterior, it doesn't matter where
25 the light source is, interior or exterior. It's

1 the facade that's exterior and we're lighting the
2 facade, so it's still exterior lighting, even if
3 the light source is inside in a closet.

4 The other thing is on lighting facades,
5 just something to think about and perhaps you
6 already have, sometimes only the front of the
7 building is lighted, and you'll want to make sure
8 that the wording is such that people can't use the
9 entire exterior of the building surface area in
10 order to qualify for their watts per square foot
11 on facade, and only the part of the facade that
12 they're actually lighting.

13 CEC PROJECT LEAD FLAMM: Okay, Jim, do
14 you want to move on to Canopies?

15 CONSULTANT BENYA: Yes. Well, folks,
16 this is a fun one. It's difficult not to talk
17 about exterior canopies with one of the more
18 frustrating things we often see, which is the gas
19 station canopy, that is actually the cause of
20 quite a bit of consternation when we start talking
21 about outdoor lighting. I don't think there is a
22 person out there who hasn't approached a gas
23 station canopy where the illumination levels
24 underneath it were 100 footcandles, and there are
25 some very passionate, strongly held beliefs that

1 it's necessary to have light levels that high
2 under certain gas station canopies.

3 So this is probably one of the two
4 areas -- I was lucky, I got two real fun ones,
5 this and outdoor retailing -- this is one of the
6 ones that we know is tricky, but I think we got
7 some good ideas. Let me show them to you real
8 quick here.

9 First of all, a lot of the points that
10 we've all made are the same. Yes, we're talking
11 about four zones; yes, we're talking about using
12 the ETAL procedure and other things. I think the
13 key to what we think we're likely to do, as we
14 work the numbers through on this is, first of all,
15 the environmental zones will give us -- right now,
16 in the IES handbook, in fact, in the IES outdoor
17 retail lighting recommended practice, there are
18 different lighting levels recommended for
19 different zones, lighting zones, two right now --
20 dark surrounds and light surrounds -- for gas
21 station canopies. Both of these light levels are
22 frankly quite a bit lower than the light levels
23 many of us experience today driving up to the
24 typical gas station filling canopy.

25 So we will be dealing with that. This

1 is an area where, as everybody knows, there is a
2 lot of concern about security, and security
3 lighting plays a significant role in gas station
4 canopies. So we're going to be asking the IESNA
5 to really reconcile its widely varying standards
6 on this, preferably using the ETAL procedure.

7 This is tricky, because, you know, the
8 IES security lighting committee and the IES
9 outdoor retail lighting committee are this far
10 apart (indicating), and we need that to be
11 reconciled. So that's part of our -- Part of our
12 mission of ETAL really to encourage the IESNA to
13 come together on many of these so we would have a
14 solid standard on which to base our calculations.

15 A couple of other thoughts about here.
16 There are a lot of things that are canopies that
17 you wouldn't think about. If it's a covered
18 walkway between two buildings, it's a canopy. If
19 it's -- particularly if it's open anywhere, if
20 it's a not entirely enclosed not conditioned
21 space. There's a lot of circumstances where this
22 could occur: certain types of automobile and
23 truck service areas and things that aren't
24 necessarily gas stations, etc., etc. Underneath
25 stadiums --

1 CONSULTANT HESCHONG: Patios, balconies.

2 CONSULTANT BENYA: Pardon me?

3 CONSULTANT HESCHONG: Patios, balconies.

4 CONSULTANT BENYA: Patios, balconies,
5 etc., etc., so there are quite a few places that
6 fall under this description -- portes of cochere,
7 you know, vehicle canopies, etc., etc.

8 I think that where we're going to end up
9 with this is going to be very similar to what
10 we've done in indoor retail lighting, which I keep
11 using over and over again, because it's probably
12 the best example of use-it-or-lose-it philosophy
13 in Title 24. There will be basic amounts for --
14 in our lighting zones that will be permitted, and
15 then you will be allowed additional amounts for
16 certain types of lighting. For example,
17 additional lighting for retail underneath
18 canopies. And it will probably be a use-it-or-
19 lose-it amount.

20 I am also personally concerned about the
21 ornamental and decorative nature of a canopy, a
22 porte cochere, in particular, where you might have
23 marquee lighting, as at a theater entry, or you
24 might have other types, like chandeliers and other
25 decorative lighting. So one of the considerations

1 that will be discussed will be the role of a
2 chandelier allowance, not unlike the current Title
3 24 provisions, so that certain types of decorative
4 lighting will either be permitted within a certain
5 wattage, or exempted if they met certain
6 requirements. And we're talking about that right
7 now.

8 So we absolutely respect the issues of
9 outdoor retailing, of theaters and other public
10 facilities, and those will be thought about as we
11 go through the process. So that in a nutshell is
12 where I think we're headed. And again, the
13 security issue, we're very keenly aware of it,
14 with regard to the filling station. I'm not sure
15 we know how important that is or isn't going to
16 be, and the ETAL method is one of the things we're
17 hoping will help us resolve that.

18 CEC PROJECT LEAD FLAMM: Comments,
19 questions? John.

20 SPEAKER HOGAN: John Hogan, City of
21 Seattle. It seems, when you take the gas station
22 canopy issue, that not only do you need to think
23 about the people that would use the space where
24 the pumps are, you need to think about people who
25 are driving down the road. So you've got the main

1 road, you're driving down that, lit to a fairly
2 nominal level, and then all of a sudden, you know,
3 the sun appears off to your side, you flip and
4 take a look at it and you look back to the road
5 and it's tougher to see.

6 So it seems -- I mean, there at least
7 you can see the discrete light fixtures at this
8 point. Sometimes it just seems it's a huge bright
9 blob that's there. So it seems you should look at
10 it from both those sides, not just what works for
11 the gas station canopy.

12 And in terms of what levels you might
13 end up with, you've talked about a number of
14 times, maybe defaulting to 90.1 or if the ETAL
15 method, you haven't finished all of your
16 iterations on that. The value for high-traffic
17 canopies is ten watts a square foot, so all the
18 walkways and parking is .1 to .2. So we're
19 talking about a value that's 50 to 100 times what
20 the rest of the exterior lighting values are.

21 So it does not seem that that would be a
22 particularly appropriate level to --

23 CONSULTANT HESCHONG: Or any interior
24 lighting allowances to boot.

25 SPEAKER HOGAN: Right, yeah, eight or

1 ten times what the interior lighting power
2 allowances are, yeah.

3 CONSULTANT BENYA: Well, first of all,
4 we are not talking about defaulting to 90.1.
5 Because 90.1, again, does not have a scientific
6 basis that we could find. We have to create one.

7 In the advanced lighting guidelines
8 there are models of energy efficient design for
9 lighting canopies over gas stations. And you will
10 find a model in there for lighting a gas station
11 canopy to 20 footcandles, which is at or exceeds
12 the current IESNA published recommendations at
13 less than a watt a square foot.

14 My guess is the number will be in the
15 watt-a-square-foot range by the time we're done
16 because of the advanced lighting guidelines model.
17 And the only question is, is 20 enough for that
18 extreme security environment. That's the only --
19 You know, that is a typical question that is the
20 reason why the ETAL procedure is open for
21 discussion, why we're pursuing it, because we
22 don't have an absolute answer to that.

23 But if we were going on the standards
24 that are published today, which is our fallback
25 position, the results are going to be very close

1 to the models that are in advanced lighting
2 guidelines for the -- and I would say that's the
3 E3-E4 model.

4 CEC PROJECT LEAD FLAMM: Bernie?

5 SPEAKER BAUER: Yeah, Bernie Bauer with
6 Integrated Lighting again. Just one comment.
7 Jim, when you mentioned IES published, we actually
8 have, again, two standards out there, and that's
9 why we have a subcommittee now that's chaired by
10 both the retail lighting and the environmental
11 lighting group.

12 And RP2, which was just published late
13 last year, actually has some numbers that are
14 higher for urban area stations under canopies.
15 But again, none of the hundred footcandles, and
16 again, I can tell you where the two committees
17 disagree on some things, one thing we jointly
18 agree on very strongly, and that is both quality
19 and quantity of lighting, and that is glare
20 levels. A lot of what you see, like in the
21 photograph there, is not so much necessarily the
22 absolute raw light, but the fact that it's in high
23 angles and it creates a lot of glare.

24 So where the two committees differ at
25 this point in time, and where we have a jointly

1 managed subcommittee trying to resolve that issue
2 and coming up with some pretty good groundwork
3 that, again, can be reinforced by the ETAL and so
4 forth, is that the numbers may need to be adjusted
5 to some degree, but I think everyone agrees that
6 unless you again do poor design -- i.e., don't
7 want to maintain, don't want to use good lighting
8 equipment to begin with -- yes, you need 120 or
9 150 footcandles.

10 But if you're willing to do good design,
11 use good equipment, the initial light levels can
12 be a lot less, and you'll have well-maintained,
13 good-quality lighting at lower light levels than
14 we're typically seeing today, with a lot less of
15 the surface brightness glare.

16 CEC PROJECT LEAD FLAMM: Thank you.

17 Lisa?

18 CONSULTANT HESCHONG: I wanted to bring
19 up some other variables that come to mind,
20 relative to canopy or covered area lighting. One
21 is whether the covering is a permanent structure
22 or a movable structure. A lot of restaurants,
23 you've got examples of awnings that will pull
24 over, that are seasonal. How does that apply to
25 the regulations?

1 And then, along the same line of
2 thought, the difference between opaque cover, a
3 translucent cover or a transparent cover, modern
4 architecture likes to use a lot of glass and we do
5 see glass canopies. So does the use of a glass
6 canopy affect the regulations relative to what's
7 going on versus an opaque one?

8 So there's a lot of other sort of design
9 issues that probably ought to be addressed as
10 we're going through this.

11 CEC PROJECT LEAD FLAMM: Thank you. Any
12 other comments, questions?

13 Okay, great. Moving on.

14 Jim, you're on again with outdoor sales
15 lighting.

16 CONSULTANT BENYA: Yeah, I get all the
17 fun ones, but I volunteered.

18 Okay, outdoor sales lighting. When I
19 say that I get all the fun ones, it's because
20 whenever we talk about offensive outdoor lighting,
21 the first two things that come up are gas stations
22 and car lots. And it doesn't take much driving
23 around to realize that tends to be the case; at
24 least, as far as most of our perceptions are
25 concerned. Some of the work that Roger and Nancy

1 have been doing under the PIER Program may give us
2 some other information, but for the most part,
3 just a quick drive around the area last night sort
4 of reaffirmed those are pretty typical challenges.

5 What we run into with the outdoor
6 automobile sales and other sales areas are very
7 similar problems. This one is particularly
8 difficult, because we have an extensive array or
9 network of outdoor automobile sales environments
10 that have experienced a significant lighting creep
11 over many, many years. And today you'll find the
12 front row of automobiles, which the IESNA
13 recommends at somewhere around 30 footcandles, are
14 being illuminated to 100 footcandles.

15 And we as a society become accustomed to
16 that, to a certain extent, and imposing a power
17 density limit on an outdoor sales area may be one
18 of the more challenging things compared to our
19 current practices. And we're very conscious of
20 that. Conversely, we're also very conscious of
21 the fact that it's one thing to have a very, very
22 brightly lighted area in what we have described as
23 an E1 and E2 zone, and it's a whole other thing to
24 have an automobile sales area in an E3 or an E4
25 zone.

1 And the E3-E4 zone challenge has the
2 security issue that may be more significant than
3 it is in an E2. Of course, that varies a lot,
4 again, by community issues. So this is -- If
5 there was one that I would say is among the more
6 challenging for us, this one is. And what we came
7 up with for the canopies probably even applies
8 more so here.

9 Number one, the way this standard we
10 proposed to develop it, based on these zones and
11 so on, will again have a use-it-or-lose-it type of
12 approach. It was pointed out in one of our
13 discussions that many retailers want to take an
14 automobile or two or three that are on special,
15 place them on platforms, elevate them, sometimes
16 even angle them towards the road, and much the way
17 you would feature displays in a retail store, you
18 want to feature displays of automobiles.

19 Well, the similarity did not get past
20 us, and we felt that the use-it-or-lose-it
21 techniques in Title 24 interior could be directly
22 leveraged into the exterior. So the approach for
23 exterior sales areas will be, as we think it is
24 going to go right now, number one, it is a Title
25 24 requirement. Number two, you will look at plan

1 areas and you will take certain areas of the plan,
2 and as long as they are illuminated areas, as we
3 talked about before, you will get a certain base
4 allowance, depending upon their use. And number
5 three, you will then be given additional use-it-
6 or-lose-it lighting to light the front row of
7 automobiles along the thoroughfare, to light
8 feature display automobiles and other things on
9 the lot.

10 And that, combined with other allowances
11 you're provided with for the site of the retail
12 display environment, such as driveways and so on,
13 would also be part of your total allowance. There
14 would be, as we've talked about before -- This may
15 get a little tricky, because you're going to have
16 a row of feature-display automobiles followed by
17 rows of automobiles, followed by a drive, adjacent
18 to a driveway, adjacent to a walkway. And I think
19 at many of the car dealerships I've been to, you
20 say how the heck do I draw partitions between
21 these. And this is where -- the way the watts per
22 square foot are going to be calculated.

23 We have yet to work some of this detail
24 out, but I think if you start thinking, again, in
25 plan view, you can begin to say, well, gee, as

1 long as I draw the line there, I can pretend that
2 there is a wall between these two and use that for
3 my calculations. And I'll probably come out
4 pretty close.

5 So taking several people's comments
6 today into account about the complexity, the need
7 for complexity or balancing against the desire to
8 make it as simple as possible, I think we can
9 solve that by using the use-it-or-lose-it-based
10 retail approach, very similar to interior, for
11 this type of exterior display area, that,
12 parenthetically, is not under a canopy. And the
13 way we differentiate the two is, obviously, the
14 presence of a canopy or no canopy, that will fall
15 under one or the other with both of them having
16 retail lighting provisions in a use-it-or-lose-it
17 scenario.

18 And I'm not going to go through all the
19 rest of the slides, because they all say the same
20 things all the rest of them do.

21 CEC PROJECT LEAD FLAMM: Thank you, Jim.

22 Comments, questions? In the back of the
23 room.

24 CONSULTANT BENYA: Could we advance the
25 slide one slide, though? I want everybody to

1 look -- you know, this is -- the bunches of
2 lighting that we're all familiar with are kind of
3 the issue that gets people excited about this, and
4 I think it's a fairly manageable situation using
5 this philosophy.

6 SPEAKER MAAS: Brian Maas, with the
7 California Motorcar Dealers Association, 1400
8 franchised car dealers. Many of those lots you
9 drive by last night were members of our
10 association.

11 I think you summarized it nicely in
12 saying it's a challenging issue. Obviously, from
13 the car dealer's perspective, lots where they have
14 literally millions of dollars of inventory and
15 they're trying to attract customers to view the
16 inventory, there are concerns not only about
17 selling those vehicles, but making sure that
18 they're secure and safe. And, as someone said
19 this morning when I was here, in terms of what the
20 goal of SB5X is, in terms of efficiency, I don't
21 think that car dealers are opposed to having
22 efficient lighting; the question is, is it going
23 to be enough to meet their retail needs and their
24 security needs.

25 And I encourage you to look closely at

1 that before you come up with standards, and we'll
2 be monitoring the process closely. Thank you.

3 CEC PROJECT LEAD FLAMM: Thank you.

4 Lisa?

5 CONSULTANT HESCHONG: I wanted to offer
6 the comment that the issue of security and safety
7 has come up a number of times on various issues,
8 and I wanted to make sure that we realize that
9 lighting is not the only solution to security,
10 there are many ways to address security and safety
11 in an environment, one.

12 And, two, simple horizontal illumination
13 is not necessarily the best way to provide
14 security and safety. The contrast ratios and
15 being able to identify moving objects within a
16 field of view are also appropriate ways of looking
17 at security and safety. So we've just got to keep
18 in mind, there are multiple solutions there to
19 address many of these problems.

20 CEC PROJECT LEAD FLAMM: Thank you.

21 John?

22 SPEAKER HOGAN: John Hogan, City of
23 Seattle.

24 Jim, you raised the auto sales as one of
25 the key exterior retail sales. The interior

1 lighting categories is a relatively limited number
2 of categories. There is the use-it-or-lose-it
3 allowances.

4 What is your thought about evaluating
5 outdoor sales? Do you see multiple different
6 categories? I mean, think about gardening or
7 exterior restaurant seating, or do you see using
8 sort of one approach with this use-it-or-lose-it
9 highlighting? What are your thoughts?

10 CONSULTANT BENYA: Well, John, in Title
11 24 interior, the way we tend to differentiate the
12 lighting power allowances to a certain extent is
13 based on the throw distance and other factors.
14 You get so much for feature displays, which are on
15 the floor, but it's based on a limit of up to ten
16 percent of the floor area. You're allowed a
17 certain number of watts per square foot for wall
18 display area that can be demonstrated on the
19 elevations, but there is no differentiating
20 whether it's shoes or dresses or anything else.

21 So I suspect it won't be so much a type
22 of merchandise thing as it is a type of display
23 thing. In other words, I think it is unfair for
24 us to try and get too involved in, well, my
25 display is more valuable than yours, and we start

1 arguing about those sorts of things. I think if
2 we provide adequate flexibility and adequate power
3 density so that people can illuminate what they
4 need to do, those feature displays, I think we'll
5 be okay.

6 I'd like to think that we are actually
7 going to be capable of writing a standard that our
8 friends in the automobile dealers association will
9 find actually works for them. What it will --
10 Probably the biggest thing we'll find and the most
11 likely outcome is they will probably end up, in
12 order to have to achieve the light levels they are
13 accustomed to, they might have to use a little bit
14 more sophisticated lighting equipment. In other
15 words, they won't be able to use inexpensive
16 floodlights and spend half the light, you know,
17 illuminating the sky and nearby buildings.
18 They're going to have to use lighting that
19 concentrates the light back on their site pattern.

20 But that is cost-effective. You know,
21 it's inexpensive to build with inexpensive
22 equipment, but it's not cost-effective in the long
23 run, when you look at the -- you know, look at it
24 having so much light being wasted. And that will
25 be the test. Because I don't want to see them in

1 any way feel that it's not allowing them enough
2 light.

3 We have a history of doing everything we
4 can to permit retailers enough light. We've been
5 through that with interior retail lighting. It
6 was a major battle 20 years ago. We worked it
7 out, and we're going to do the same thing here.

8 CEC PROJECT LEAD FLAMM: I'd like to
9 have Mazi and then Pat and then Bernie.

10 CEC STAFF SHIRAKH: Again, I just want
11 to reiterate what Jim said. You know, we have a
12 long track on retail lighting in this state, and
13 we've done everything we can to promote energy
14 efficiency and good lighting and sufficient
15 levels. And anybody who goes to shopping centers
16 around this state will see that there is plenty of
17 light to do what we need to do in an efficient
18 manner.

19 And, you know, we intend to carry that
20 same philosophy to outdoor sales lighting. You
21 know, essentially we see those as being the
22 extension of what we're doing. They're not
23 fundamentally that different. So we will take
24 this matter seriously.

25 SPEAKER SPLITT: Pat Splitt, APP-TECH.

1 I can see a potential problem where you're in an
2 area where there already are a bunch of
3 dealerships that have been creeping up their light
4 levels for years until they're at about the pain
5 threshold right now. And now a new dealership is
6 going in right between a couple of these and he
7 has to meet these new requirements. And maybe, on
8 its own, he'd have satisfactory illumination, but
9 relative to everything else you can see as you're
10 driving down this road, it's not even visible.

11 I could see potential lawsuits. I don't
12 know, it just seems like there has to be some way
13 of dealing with this existing lighting that's too
14 high. I don't know how you can mandate it. I
15 mean, you might be able to talk PG&E into giving
16 some sort of rebate for existing places to
17 retrofit to lower light levels, but I'm not sure
18 if I knew I was screwing my new competitor that,
19 even if the lighting is for free, that I'd go for
20 it. I mean -- That's a technical term, I'm sorry.

21 CONSULTANT HESCHONG: Maybe we could do
22 a steady improvement if he was selling more
23 product.

24 SPEAKER SPLITT: Yeah, it just seems
25 like it was a problem.

1 CEC PROJECT LEAD FLAMM: Thank you. I
2 think those are some good points.

3 Bernie?

4 SPEAKER BAUER: Bernie Bauer again with
5 Integrated Lighting.

6 I just wanted to support Jim's statement
7 in that, yes, outdoor retail may not be able to do
8 what they've been used to doing under, let's say,
9 wattage requirements which will dial back into
10 lighting design application, but to me it's kind
11 of a no-brainer.

12 I do a lot of retail with real high-end
13 retailers who sell product similar to automobiles.
14 The last time I bought or leased an automobile,
15 you know, you're looking 20-, 30-, \$40,000.
16 Neiman Marcus sells dresses and diamonds and
17 things like that nature. The high-end retailers
18 have realized the benefit, regardless of Title 24,
19 to use good-quality lighting equipment and lamps,
20 and the stuff is available out there. And I would
21 think the auto people should be looking at some of
22 these new light sources and equipment, just from
23 the standpoint of what it could possibly do to
24 help sell more cars, or at least make the cars
25 more attractive.

1 CEC PROJECT LEAD FLAMM: Okay, thank
2 you. And in the back? And, as he comes up, I
3 just want to say that we're not trying to solve
4 all this today. I think we're trying to get all
5 the issues out on the table, and we're glad you're
6 all bringing them out.

7 So we don't always have solutions to
8 offer, but this is great dialogue.

9 SPEAKER FERGUSON: My one question is
10 when you get into outdoor retail lighting, how are
11 you approaching, let's say, high-mast lighting,
12 where you have a higher pole of 80 feet, and
13 you're separating further and you may have maybe a
14 little bit more energy costs to get the lighting
15 levels that you want. But you're reducing the
16 number of poles and the installation cost.

17 So you kind of have a tradeoff there,
18 with the high-mast lighting, which a lot of the
19 big-box stores and, well, you'll get into other
20 areas where they use it -- they use it in airports
21 and stuff -- but it works its way around by using
22 less poles and installation cost drops
23 substantially.

24 Is there a problem in height, as long as
25 it's cutoff or the dark sky or whatever?

1 CONSULTANT BENYA: Well, remember, this
2 is an energy discussion. You're going to get so
3 many watts per square foot of car parking lot, for
4 example, for vehicle storage in this case. And
5 it's going to be a different lighting level you
6 get for an ordinary parking lot, maybe higher,
7 much higher. That's one of the things I don't
8 know yet, but maybe. If you want to light it with
9 a high mast, fine.

10 SPEAKER FERGUSON: Yeah, but you were
11 saying about, I guess --

12 CONSULTANT BENYA: You can put up any
13 pole height you want.

14 SPEAKER FERGUSON: Yeah, but you were
15 talking uniformity, and I was just kind of
16 wondering if --

17 CONSULTANT BENYA: You can put up any
18 pole height you want. You can use any type of
19 lighting system you want, probably. You know,
20 remember I said earlier this morning, shielding
21 has been part of our discussion, there has been a
22 thread of shielding, in the case of automobile
23 dealerships and other retail outdoor sales, gas
24 station canopies and so on.

25 The problem we have is that something

1 that is too bright -- that is, there is too much
2 glare -- can cause drivers' eyes to become
3 differently adapted, which will make it difficult
4 for them to see properly, and that's bad. So if
5 there is a glare control requirement or a
6 shielding requirement, it will be because of its
7 effect on adjacent properties, not because of your
8 visibility in the property you're on.

9 SPEAKER FERGUSON: Okay.

10 CONSULTANT BENYA: But that's kind of a
11 separate issue from the question you're asking.
12 Separate and apart from that, the energy standards
13 will not probably be dealing with light pollution
14 and light trespass directly. It's an offshoot,
15 but it's not dealt with directly by Title 24. You
16 can use any pole you want.

17 Now, the community will have
18 restrictions against pole height.

19 SPEAKER FERGUSON: Right.

20 CONSULTANT BENYA: That's going to come
21 under those nuisance laws, light pollution and
22 light trespass laws I talked about earlier as
23 well. But it's not part of Title 24.

24 So, from Title 24 perspective, pole
25 height is irrelevant.

1 SPEAKER FERGUSON: Okay. Will you be
2 talking about roadway lighting or highway
3 lighting?

4 CONSULTANT BENYA: We will. We have
5 Public Right of Way Lighting is coming up after
6 our break.

7 SPEAKER FERGUSON: Okay.

8 CEC PROJECT LEAD FLAMM: And we are at
9 the time for a break, and we're pretty much on
10 schedule. We're really close, that's really
11 great.

12 Rick, do you want to say something
13 first?

14 SPEAKER MILLER: Rick Miller with HOK.

15 There's another area of outdoor sales
16 lighting, and that's the banking ATM machines.
17 And there are some other ordinances that cover
18 lighting of that area. Would Title 24, the new
19 one address that?

20 CONSULTANT BENYA: Well, we -- earlier
21 in this process we had sort of a brainstorming
22 session with our team, and we came up with all
23 sorts of outdoor lighting applications that aren't
24 on our list, and that was one of them.

25 SPEAKER MILLER: Yeah, all right.

1 CONSULTANT BENYA: Okay.

2 CEC PROJECT LEAD FLAMM: Okay. I'd like
3 to recommend we take a break, but only if you
4 promise to come back.

5 (Laughter.)

6 CEC STAFF SHIRAKH: 3:30 by that clock.
7 That's a little bit off, but we're going to use
8 that.

9 CEC PROJECT LEAD FLAMM: 3:30 by that
10 clock we're going to start out. I'm going to ask
11 security not to let anybody leave the building.

12 (Thereupon, a recess was held
13 off the record.)

14 CEC PROJECT LEAD FLAMM: The next
15 presentation will be billboard and outdoor signage
16 lighting. First we'll have Lisa present for the
17 project team, and then Gary Hernstrom for PG&E
18 will make a presentation.

19 CONSULTANT HESCHONG: All right. We
20 have a much smaller group for probably one of the
21 more controversial issues. That always helps.

22 There is a proposal on the table, as
23 part of this process, to see if there is an
24 appropriate way to regulate some of the lighting
25 that's used for billboards and outdoor signage.

1 This is one of our more difficult tasks, because
2 it really is cutting new territory. Billboard and
3 signage energy use lighting regulation has
4 generally not been included in any of the other
5 codes, state or local codes that have addressed
6 outdoor lighting.

7 I should say that, however, last year
8 under the governor's emergency provisions,
9 billboard and outdoor signage lighting was
10 included. So we do have precedents within
11 California from last year's emergency regulations.

12 The proposal that's currently on the
13 table is to look at a lighting power density for
14 billboards and signage. The challenge there is to
15 define the area. That may be a lot easier with a
16 billboard than with a sign, which can have all
17 kinds of shapes and areas and be three-
18 dimensional. And so a lot of the challenge there
19 is in coming up with the proper definition of the
20 area that is being controlled at a certain
21 lighting level.

22 The intention is to cover all
23 permanently installed outdoor signs and
24 billboards; however, not to cover temporary
25 signage or public directional street right-of-way-

1 type signage. So the effort is primarily at
2 signage used for communicating other things
3 besides how to find your way through a city.

4 Again, the proposal is that the various
5 conditions will most likely have some variance by
6 the lighting zones, and the greater impact there
7 may be with controls, control requirements or
8 definitions. The lighting power density will be
9 pursued through a similar type of process using
10 the ETAL method in terms of visibility and
11 discrimination.

12 One of -- There are a number of
13 objectives, I think, that the team is trying to
14 pursue. The first and primary is to save
15 electricity and demand, very straightforward and
16 simple. To avoid wastage light, to avoid
17 excessive use of illumination that is wasteful.

18 Secondly, there is a great deal of
19 concern about billboards and signs as a source of
20 glare, and which could push people's adaptation
21 level to a higher level, and therefore require
22 higher levels of illumination on adjacent
23 properties. And so there is a secondary issue of
24 how to structure a set of regulations that will
25 somehow reduce the potential for glare or

1 extremely high levels of luminance from these
2 signs, which may push people up to a further
3 adaptation level.

4 With outdoor billboards and signage, if
5 the outdoor billboard or sign is required to get
6 an electrical permit for work being done, there is
7 a fairly straightforward process of putting those
8 requirements through the building permit process
9 which follows the Title 24 procedure.

10 However, with billboards and signs,
11 there is also a great deal of precedence in
12 California for local districts regulating signs as
13 part of their design conditions or zoning
14 conditions for their areas. And so we will also
15 be looking at the potential for creating a model
16 standard that would be adoptable through that
17 procedure through local jurisdictions, as opposed
18 to through the Title 24 permitting process.

19 Now, another challenge with signage and
20 billboard is extraneous light, light which is
21 escaping beyond useful illumination. For a lot of
22 billboards, this is light that is escaping up into
23 the sky or onto adjacent properties and that is
24 not being used to usefully illuminate the surface
25 of the sign, if it's an exterior-illuminated sign.

1 Those concerns about wasted light, about
2 intrusive light then start to argue for some form
3 of cutoff control or control of the illuminance.
4 It doesn't all necessarily have to be done as an
5 equipment description, it can also be done through
6 the design of the sign itself and how the light is
7 distributed on the sign.

8 Similarly, with signs that are
9 internally illuminated, there is a great deal of
10 wasted light from inefficiencies within the
11 internal illumination. There are also concerns
12 about new technologies that are developing. LEDs,
13 for instance, that have extremely high illuminance
14 levels in only one direction, and in order to get
15 appropriate illuminance at side angles, you might
16 be overlighting in one particular direction.

17 So these are the challenges that the
18 team is going to be looking at, trying to
19 understand all the different parameters, where the
20 light is going, where it should be going, what the
21 visibility criteria are for these, and also the
22 very important one of how we define the area that
23 we are trying to address. What is included, what
24 isn't included within this kind of regulation.

25 That's my preamble, and I can open it to

1 questions or comments.

2 CEC PROJECT LEAD FLAMM: Let's wait for
3 the discussion until after Gary Fernstrom makes
4 his presentation. Gary?

5 SPEAKER FERNSTROM: Thank you. Gary
6 Fernstrom, PG&E. In the interest of being quick,
7 I didn't prepare a presentation to duplicate what
8 I submitted, but I wanted to show, for the
9 individuals present, some examples of what I
10 proposed.

11 First off, one thing I didn't mention
12 and that is decorative lighting; specifically,
13 holiday decorative lighting. I'm not sure how
14 well you can all see it, but I have a little
15 package here of LED decorative lights that I
16 bought for five dollars last Christmas at Rite-
17 Aid. This string of 50 LEDs operates at about
18 four watts, compared to --

19 COMMISSIONER ROSENFELD: For the whole
20 string?

21 SPEAKER FERNSTROM: For the whole
22 string, compared to ten times that much for
23 incandescent lamps. For a few hours during the
24 holiday season, it probably doesn't make much
25 difference, but for retail establishments that use

1 these lamps every day on trees to enhance the
2 appearance of their premises, it could make
3 several hundred dollars a year difference in the
4 cost of operating the lights.

5 So I'm not sure how the standards may or
6 may not want to treat this opportunity, but an
7 energy savings of a factor of 90 percent is
8 enormous. And I think that's the opportunity
9 we're generally looking at with light-emitting
10 diodes.

11 I brought along two other samples. This
12 is a channel letter. It's miniature. Most of
13 them run 18 inches to two feet in height. This is
14 an S, for the purpose of the record. It's red,
15 and if I take the cover off, you can see that the
16 LEDs are mounted on a little circuit board. There
17 are five of them and they're shining toward the
18 back of the letter where the white surface
19 reflects the light and makes a nice, even
20 luminance on the surface of the S. These LEDs
21 operate at about 10 to 15 percent the energy of
22 the neon equivalent. Neon works at about ten
23 watts a lineal foot; these LEDs work in the range
24 of about one and a half watts a foot.

25 This is a larger and brighter sign with

1 a retrofit package made by another manufacturer.
2 This is in the shape of an L. I'll take the cover
3 off. You can see there are two-inch by two-inch
4 circuit cards in here with one high-brightness LED
5 in each corner. This sign doesn't quite operate
6 at an 85-percent savings. It's in there at about
7 75 percent, so the LEDs are using 25 percent the
8 power and energy of the neon equivalent.

9 However, I think with some thought,
10 additional thought to the design of the electronic
11 circuitry, this could be easily brought down into
12 the 15-percent range with the same surface
13 luminance that it currently has. So there is a
14 huge opportunity here. We propose that we look
15 into it, and develop a standard that would be a
16 lighting power density standard as a function of
17 the linear feet of sign, because that's easier to
18 measure, the center line distance versus the
19 surface area.

20 The aspect ratio that's normally used
21 kind of defines the area as a function of the
22 center line distance, so I believe it could be
23 used as a simple proxy for defining a standard as
24 opposed to using the surface area.

25 Lastly, we've proposed --

1 COMMISSIONER ROSENFELD: Just a
2 question. What is the wattage of that L, roughly?

3 SPEAKER FERNSTROM: This is operating at
4 a little less than four watts, about 3.6 watts.

5 COMMISSIONER ROSENFELD: And it would be
6 like 30 if it were neon?

7 SPEAKER FERNSTROM: Well, neon is about
8 ten watts a foot, and this is about a foot and a
9 half, so it would be about 16 watts, if it were
10 neon.

11 COMMISSIONER ROSENFELD: Thanks.

12 SPEAKER FERNSTROM: Lastly, we've made a
13 proposal for box signs. Those are signs that are
14 typically illuminated with fluorescent lamps. The
15 industry has generally gone to T8s and electronic
16 ballast, but that's not required and it's not
17 universally practiced. So we're proposing the
18 establishment of a lamp ballast system efficacy
19 standard that would essentially require that the
20 sign-makers use the equivalent of T8 lamps and
21 electronic ballast.

22 That concludes my presentation. Thank
23 you.

24 CEC PROJECT LEAD FLAMM: Thank you.

25 Lisa?

1 CONSULTANT HESCHONG: May I ask Gary a
2 question, which is would you envision that these
3 standards be applied through the Title 20
4 equipment standards, Title 24 building permit
5 standards, or some other mechanism?

6 SPEAKER FERNSTROM: Whichever is
7 quickest, and to spin off your definition of
8 outdoor signs, it's our belief that these are
9 outdoor signs, even if they're used indoors in
10 malls.

11 CEC STAFF PENNINGTON: A variant on
12 Lisa's question. I think if these are
13 manufactured devices rather than cycled devices,
14 it would be more plausible to pursue a Title 20
15 change, so --

16 SPEAKER FERNSTROM: They actually can be
17 either. These LED kits are sold as subassemblies,
18 and they can be assembled into the channel letter
19 at the time of manufacture by the sign
20 manufacturer, or they can be retrofit into
21 existing signs in place.

22 So you could either consider it as an
23 attachment to the building or as a product being
24 sold within the state.

25 Commissioner Rosenfeld?

1 COMMISSIONER ROSENFELD: Those are
2 pretty impressive. To make a facetious comment,
3 after having, like all of us, spent hours looking
4 for house numbers on rainy nights, I think you
5 ought to start a small industry of ones this high
6 (indicating) with three LEDs in them, which would
7 give house numbers.

8 SPEAKER FERNSTROM: But that would be a
9 load-building program, Commissioner.

10 COMMISSIONER ROSENFELD: That's right.

11 (Laughter.)

12 CEC PROJECT LEAD FLAMM: Any other
13 discussion? Dawn?

14 SPEAKER DE GRAZIO: Dawn DeGrazio of
15 SMUD. Also, in the proposal you just talked about
16 the LEDs, but there was also in here about the box
17 signs and T8 fluorescent lamps, with electronic
18 ballast for box signs. I'm assuming that these
19 are generally outdoors and that I happen to know
20 that not all of California is always above 50
21 degrees for starting temperature for this
22 equipment, and the current -- currently, as far as
23 I'm aware, the ballast for starting T8 lamps are
24 rated at 50 degrees starting temperature
25 Fahrenheit.

1 I know that you can -- Well, there are
2 other options. You can go to HO and stuff and get
3 down to 20, but I know there are also colder
4 conditions than that, so I guess I'd want to be
5 careful about weather conditions and the
6 equipment, and if they're appropriate to all of
7 the weather conditions they might be used for.

8 CEC PROJECT LEAD FLAMM: Thank you,
9 Dawn.

10 Jim?

11 CONSULTANT BENYA: Yeah. Actually,
12 Dawn, I think the generic instant start ballast
13 these days is rated to zero. But you're right
14 about getting below zero, you have to get into a
15 different technology.

16 The other thing that you need to know
17 about a lot of signs, a lot of signs use cold
18 cathode technology, as opposed to fluorescent.
19 And one of the primary reasons for that is either
20 the need for a custom shape or custom bending, you
21 know, things like that, if you want a lamp that
22 goes along those lines, squiggly or something,
23 cold cathode is often used.

24 There is an electronic ballasting
25 technology available for cold cathode lighting,

1 and I think if we were to look at it as a lumens
2 per watt type of requirement, not so much a
3 specific technology but have a lumes per watt or
4 high efficacy requirement, similar to other high
5 efficacy requirements we've had in the past, that
6 might have some real merit.

7 The thing you've got to be careful of
8 with efficacy, is remember, efficacy doesn't count
9 when you're dealing with saturated colors.
10 Because the lumen doesn't count when you're
11 dealing with saturated colors.

12 And Gary's demonstrations, I think,
13 should be remembered as very, very powerful,
14 because what he showed us was light sources that
15 generate only the color you want. And too often,
16 when you use color in signing, we're generating
17 white light and subtracting the colors we don't
18 want. And it's very inefficacious to do that.
19 That would occur with T8 lamps, by the way.

20 So start thinking about generating the
21 color you want to begin with, which Gary's
22 demonstration should remind us is more much
23 efficacious, even if it's not measured in lumens
24 per watt.

25 CEC PROJECT LEAD FLAMM: Okay. Jack and

1 then Bernie.

2 SPEAKER SALES: Jack Sales,
3 International Dark Sky Association.

4 Well, I think it's pretty much a
5 no-brainer that we're not in favor of bottom-lit
6 billboards that shine up into the sky and waste
7 all that energy. I'm also concerned about reader
8 boards, and I'd like to have a little look at
9 that. I see those as coming on --

10 COMMISSIONER ROSENFELD: What is a
11 reader board?

12 SPEAKER SALES: Reader boards are the
13 large electronically controlled LED signs that
14 either produce moving television or, in some
15 cases, mandated by a city perhaps that they only
16 change their advertisement once a day. And my
17 concern there is not only energy use at night, but
18 also in the daytime. So even though this is very
19 good technology, it needs to have a look.

20 CEC PROJECT LEAD FLAMM: Okay. Bernie?

21 SPEAKER BAUER: Yeah, Bernie Bauer with
22 Integrated Lighting Concepts.

23 Again, on the two proposals for the T8
24 lighting and the LED, I agree the T8 lighting for
25 signs is a no-brainer, and Jim did clarify that we

1 have ballast that will start these lights in even
2 the cold-air climates of California.

3 I'm a little concerned with the LEDs. I
4 think it's the wave of the future. It's like with
5 all other new technologies. We saw the red, which
6 is very wonderful; not all the colors are as
7 bright, not all of them last as long. And we
8 necessarily, when we're looking at some of the
9 exterior signing, we are looking at a decorative
10 element. So someone may want a mauve sign, and a
11 mauve-colored sign could be a little difficult
12 with LEDs unless you mix them.

13 And the other thing is, I wish I would
14 have known where you got those five-dollar ones,
15 because the ones I priced out are a lot more
16 expensive. But another -- But a positive on it.
17 Christmas tree lights, how many of us swear every
18 year when we try to change out half of the burned-
19 out ones? One of the benefits is that even the
20 LEDs that have less life today all have light much
21 longer than the longest incandescent light.

22 So I think it's there, I would like to
23 see it approached the same way we've approached
24 other cutting-edge technology, and that is that we
25 don't necessarily write the standard on it, but we

1 have following the standard, just like we do with
2 interiors, an advanced lighting guide. And that's
3 where we point out some of these other things that
4 are coming down the tubes that can help you to do
5 a design job even better than what Title 24 says
6 you must do, power-density-wise.

7 SPEAKER FERNSTROM: So it's not an
8 advertisement, I got them at Rite-Aid and they
9 were a dollar off.

10 (Laughter.)

11 CEC PROJECT LEAD FLAMM: Thank you.

12 Pat and then Cheryl.

13 SPEAKER SPLITT: Pat Splitt, APP-TECH.

14 Speaking of LED signs, there are a lot
15 of huge ones going up now. But also, in Santa
16 Cruz I've been noticing they finally have gotten
17 around to complete LED traffic lights. And I've
18 been noticing at night they're really bright. And
19 I assume it's because they have to put enough
20 intensity so that you can see them with the sun
21 behind them or something, but it would seem to me
22 that in that instance, and also with all of these
23 other signs that are lit day and night, that even
24 though LEDs don't use a lot of electricity, that
25 you could cut down what they use by half at night

1 or something by dimming them down, and they would
2 still work just as well.

3 CONSULTANT BENYA: Actually, Pat, what
4 you're describing is a phenomenon that's been
5 particularly associated with green LEDs. And the
6 green LED traffic signal is something like two and
7 a half times the typical incandescent traffic
8 signal that we're used to. Part of the reason for
9 that is that many LED products have rather
10 significant lumen depreciation. And there have
11 been several technical papers that have shown that
12 LED life is not what it's cracked up to be.

13 Some of the LEDs were being claimed for
14 100,000 hours of life, but if they were measured
15 the way we measure light bulbs, they were 10,000
16 hours. So there are some significant difference
17 between the way people talk about LEDs and the way
18 we talk about lighting, and we need to be careful
19 of that.

20 That said, the reason why the LEDs are
21 so bright now is because they won't be about five
22 years from now. And they will barely meet the
23 requirements when they are near the end of their
24 life.

25 SPEAKER FERNSTROM: So spinning off the

1 Commission's notion of curfew, part of our
2 proposal was to call for dimming or switching the
3 signs off during the late evening and morning
4 hours. LED technology is very amenable to that,
5 because it can either be switched or the voltage
6 reduced to or reduce the drive, and easily
7 accomplish dimming.

8 CEC PROJECT LEAD FLAMM: Thank you.

9 Cheryl?

10 NEMA REP ENGLISH: Cheryl English,
11 Acuity Lighting Group.

12 With regard to the T8 issue, I don't
13 even know if that really applies in this case,
14 because by 2005 the federal legislation will no
15 longer require T12 magnetic ballasts to be sold,
16 and manufacturers won't be producing T12
17 electronics. So T8 electronic will be effective
18 as of April 1st, 2005.

19 Also, with regard to the billboard
20 lighting, in the proposal there was mention of
21 determining when that lighting is not needed. And
22 I would recommend to the contractors to work
23 closely with the trade associations in those
24 areas. The Outdoor Advertising Association of
25 America, OAAA, and others have a lot of data on

1 geographic patterns, traffic patterns, and this is
2 how -- the data that they use to determine when
3 they're going to have their billboards on and how
4 they're going to bill their customers. So I think
5 that they could provide a great deal of insight to
6 you in your studies.

7 CEC STAFF PENNINGTON: Could you say
8 again what the name of that trade association is?

9 NEMA REP ENGLISH: Outdoor Advertising
10 Association of America.

11 CONSULTANT ELEY: OAAA.

12 CEC PROJECT LEAD FLAMM: Okay, John, you
13 have a comment?

14 SPEAKER HOGAN: Just a couple of
15 questions and maybe Gary has partially answered
16 one of them for me, but Lisa, were you thinking
17 about distinguishing between standards for
18 internally illuminated versus externally
19 illuminated versus video signs? You know, was
20 there going to be some distinction between those
21 or was there just going to be a number for all of
22 them? And then a followup question --

23 CONSULTANT HESCHONG: Yes, probably.

24 SPEAKER HOGAN: Yes, probably?

25 CONSULTANT HESCHONG: Probably.

1 SPEAKER HOGAN: A followup question, if
2 you think about simplification, is there some
3 reason to distinguish between externally
4 illuminated billboards and building facades, so is
5 it all sort of a sign? Should it all have the
6 same number?

7 CONSULTANT HESCHONG: Well, that's a
8 good point.

9 SPEAKER FERNSTROM: Well, in response to
10 John's question, what we're essentially proposing
11 is an efficacy standard, whether you get at it in
12 terms of watts per center line foot or system lamp
13 ballast efficacy, it's an efficacy standard. If
14 the CEC wishes to adopt some luminance standard,
15 that could be applicable to both externally and
16 internally illuminated signs. PG&E hasn't chosen
17 to address that.

18 CONSULTANT BENYA: Yeah, I just want to
19 reiterate my warning that when you get into
20 saturated color, and LED and saturated color
21 sources, the lumen per watt thing is a much
22 distant relative from anything we're used to
23 working with.

24 SPEAKER FERNSTROM: Well, we
25 intentionally avoided the lumen per watt issue by

1 theorizing that we might best utilize a watts per
2 center line foot approach and not address the
3 lumens at all.

4 CONSULTANT BENYA: Excellent.

5 CONSULTANT ELEY: Gary, could I get
6 clarification about the center line foot concept?
7 That includes the space between the letters and
8 everything; is that right?

9 SPEAKER FERNSTROM: No, it's the
10 equivalent length of neon --

11 CONSULTANT ELEY: Okay.

12 SPEAKER FERNSTROM: -- so you would
13 measure the center line of the letter, and
14 ordinarily with neon there is a high-voltage
15 jumper that forms a conductor to the next letter
16 where the neon takes over again.

17 CONSULTANT ELEY: Okay.

18 SPEAKER FERNSTROM: So it would be the
19 center line distance summed up for the entire sign
20 and rounded off to the nearest foot.

21 CONSULTANT ELEY: So you wouldn't
22 consider the serif on the bottom of the characters
23 and all --

24 SPEAKER FERNSTROM: No.

25 CONSULTANT ELEY: I mean, these are

1 block letters here, but --

2 SPEAKER FERNSTROM: No, and obviously,
3 we haven't studied this enough to completely
4 formulate how the recommendation might work, but
5 that's the preliminary idea.

6 CONSULTANT ELEY: Do you know if this is
7 used anywhere, to your knowledge, the concept of
8 the center line foot?

9 SPEAKER FERNSTROM: If it's what?

10 CONSULTANT ELEY: Are there any
11 precedents where this is used?

12 SPEAKER FERNSTROM: No, we invented it
13 specifically for this purpose.

14 CONSULTANT ELEY: Okay.

15 SPEAKER FERNSTROM: I'm not aware of any
16 other use.

17 CONSULTANT ELEY: Okay, all right. It's
18 interesting, but --

19 CONSULTANT HESCHONG: How do
20 manufacturers price those? Do they use a metric
21 of how much things cost?

22 CONSULTANT ELEY: Well, the
23 manufacturers price the kits per unit, per circuit
24 board or module, but they have recommendations as
25 to how many you should use per foot of sign.

1 CEC PROJECT LEAD FLAMM: Thank you.

2 We'll move on to the next topic, Public
3 Right of Way, and Larry Ayers.

4 CONSULTANT AYERS: Thank you, Gary.

5 In a lot of ways, this is similar to
6 many of the proposed measures you've heard earlier
7 this afternoon, but there are a few differences.
8 The first thing is that the proposal is a model
9 standard. We're not proposing including in Title
10 24, Title 20, or any of the other regulations that
11 we've heard about so much so far today, but the
12 model standard is an example that a local
13 community or a county or even the state could
14 incorporate, so that it would have the energy
15 efficiency benefits of the standard.

16 One of the reasons for this, of course,
17 is that there are a lot of existing standards
18 right now for public rights of way. And this
19 would allow those entities that are using
20 standards and have adapted them to take the model
21 standard and use it as they need to.

22 What we anticipate is lighting power
23 density maximums, once again environmental zones,
24 and the ETAL procedure we may be using, depending
25 on how those work out. And we also may consider

1 lighting controls, particularly during day and
2 curfew hours.

3 And I know there has been some
4 discussion of gee, are we going to have a motion
5 detector on every street light that you come to?
6 That may not be exactly the way we end up, but
7 there are some applications, particularly on, say,
8 bikeways and some other types of public right of
9 way, where they may be appropriate. So we're
10 going to be looking at that.

11 The key benefit of this, once again, is
12 to save electric energy and demand. While it's a
13 no-brainer that, you know, electric lighting uses
14 electric energy so we figure we could cut down on
15 that a bit and then we'll save energy, demand is a
16 little harder, maybe you have to think about it
17 harder.

18 The peak demand for most places in the
19 state is, you know, the middle of the afternoon,
20 the middle of a summer afternoon when all the air
21 conditioners come in. And you think, well, maybe
22 night isn't so bad. But, on the other hand, there
23 is a secondary peak, particularly in the winter
24 when it gets dark earlier, and the people who
25 aren't staying late to get some work done are at

1 home turning on the lights and cooking and that
2 sort of thing, so saving demand by saving some
3 energy and using energy efficient technologies is
4 a good idea.

5 Once again, the enforcement mechanism,
6 the model standard. It's possible that the model
7 standard could include shielding requirements,
8 lighting controls, and the lighting power density.

9 Verification. Now, let me point out
10 that as a model standard, this doesn't mean that
11 your building inspector would be inspecting these
12 things, but if, say, a local community or city
13 said we want to use this standard, well, then
14 however they designate their roadway lighting or
15 coordinate with the local utilities for it or
16 whatever, then they could look for the things like
17 the luminaire shielding requirements and lighting
18 control calibrations. And if there is any public
19 right of way lighting that does have, like, motion
20 detectors or that type of control, then they could
21 find out ways to verify that.

22 And finally, on to cost effectiveness,
23 we anticipate developing models to show what you
24 can do from a lighting power density standpoint.
25 And these models may include some assumptions on

1 disability and discomfort glare.

2 Gary?

3 CEC PROJECT LEAD FLAMM: Okay.

4 Comments? Gary?

5 SPEAKER FERNSTROM: Larry, in defining
6 public right of way lighting, are you including
7 street and roadway lighting?

8 CONSULTANT AYERS: I would anticipate
9 that would be included, and perhaps maybe some
10 traffic signals, even.

11 SPEAKER FERNSTROM: Okay. So speaking
12 on behalf of the utilities, I'd like to express
13 concern that whatever standard is developed not
14 create a huge financial impact, in terms of a
15 potential retrofit requirement. Because the
16 utilities are probably the largest owner of
17 streetlights in the state, and own tens of
18 thousands if not hundreds of thousands of them.

19 CONSULTANT AYERS: Well, Gary, I don't
20 think the standard anticipates, and maybe I'm
21 speaking out of school here, but I don't think it
22 anticipates a retrofit requirement. So --

23 CONSULTANT ELEY: Well, this is not
24 Title 24.

25 CONSULTANT AYERS: I understand.

1 CONSULTANT ELEY: Could be.

2 SPEAKER FERNSTROM: Great, thank you.

3 CEC PROJECT LEAD FLAMM: Okay. Pat?

4 SPEAKER SPLITT: Pat Splitt, APP-TECH.

5 A couple of years ago I got hired by a
6 couple of cities to upgrade their streetlighting
7 standards. I guess PG&E was trying to get out of
8 doing streetlighting in some cities and basically
9 gave the systems over to them and they had to come
10 up with some standards. And I thought I was going
11 to, you know, just show them how to do the IES
12 method and get them to buy a little computer
13 program, and they didn't want to buy a computer
14 program. They wanted a simple little chart, that
15 they just looked up the type of street and, you
16 know, how wide it is and it tells them what the
17 spacing is for what type of fixture, and that was
18 it.

19 And I'm just wondering how complex
20 you're going to come up with a system, because I
21 don't think the cities are ready to handle it.

22 CONSULTANT AYERS: Well, what we're
23 thinking of right now, and, you know, we haven't
24 decided on anything specifically, but what we're
25 thinking of is lighting power density, so it

1 wouldn't tell them how far apart to space the
2 poles, it wouldn't tell them what source to use.
3 It would say this is the recommended power that
4 you would need for this particular area, you know.
5 How big is your street area and here are the watts
6 that you'll need for it.

7 SPEAKER SPLITT: Okay. Well, then what
8 they'll do is they'll just -- they'll look at what
9 they have in stock as far as the type of fixtures,
10 and they'll just divide your number by the wattage
11 of the fixture and they'll get the spacing and
12 that's what they'll do. I mean, illumination
13 won't come into the equation at all.

14 CEC PROJECT LEAD FLAMM: Mazi?

15 CEC STAFF SHIRAKH: To answer maybe part
16 of your question, in the standards we have, we'll
17 have lighting power densities for this measure and
18 others. But it's likely that we're going to have
19 companion documents, like the design manual or the
20 advanced lighting guidelines. And that's where
21 we're going to show or recommend how to do good
22 lighting within these limits. And that could
23 include, you know, car lots, canopies, and roadway
24 lighting.

25 So even though it may not be directly

1 addressed in the standards document itself, we
2 could address them to our design guides.

3 CONSULTANT BENYA: And if I might just
4 chip in here, you know, we expect, frankly, the
5 ETAL method will revolutionize outdoor and
6 particularly roadway lighting, that there will be
7 very important new revelations about what we've
8 been doing that's good, what we've been doing that
9 isn't so good, what we could be doing better.

10 It's the belief, the hope of the people
11 that worked on the ETAL method and the people that
12 attended the outdoor lighting criteria forum that
13 it will lead to simply less outdoor lighting than
14 is presently being used in a lot of the
15 situations, in this case, where utilities
16 presently have lighting. This would, in turn,
17 allow utilities to use less power, perhaps fewer
18 poles, and/or change what you have over time to
19 something that simply uses less energy.

20 So there is, we believe, going to be a
21 long-term benefit to everyone from this activity.
22 But I think I can speak for the group in saying
23 the reason why we're talking model code right now
24 is because the seriousness of the impact of ETAL,
25 if it does bear this fruit, is going to be so

1 profound that it's going to take quite a while to
2 make sure about it, to reconfirm it, to put into
3 the documents of the IES, particularly the roadway
4 lighting committee work, and ultimately for it to
5 become a new type of national standard.

6 And I think it is such a serious issue
7 that the model code we feel is a very good way to
8 start. It could be that sometime in the future,
9 because CALTRANS utilities and others are involved
10 in this process, that it will take significantly
11 more research than we can do this year and this
12 cycle.

13 SPEAKER FERNSTROM: So speaking as a
14 past illumination engineer and having done roadway
15 lighting design, in a new development in an
16 underground area, you can follow some criteria and
17 spot the luminaires on a spacing that may follow
18 some specification, but in an existing overhead
19 area, you've pretty much got to put the luminaires
20 where the utility poles are.

21 And that is a significant constraint.

22 CONSULTANT BENYA: And I think you're
23 probably going to find from the ETAL method, we
24 all suspect this, that instead of the currently
25 held belief that you need a luminaire with the

1 widest possible distribution because of the
2 spacings of that application, you're going to find
3 that by actually having shielded luminaires and
4 less glare, you'll be able to see just as well and
5 hopefully with less power, which is overall
6 environmentally beneficial in every way.

7 That's where we think it's going.

8 SPEAKER FERNSTROM: I personally think
9 there is an opportunity with electronic ballast
10 for streetlights too. Streetlights typically use
11 the very cheapest ballast you can find, and that
12 doesn't contribute to the highest system efficacy.

13 CEC PROJECT LEAD FLAMM: Pat?

14 SPEAKER SPLITT: Just one problem that
15 came up with the cities quite often and the reason
16 for that standard is, what happens quite often in
17 existing areas, they'll get a complaint from
18 somebody saying that the city isn't providing
19 adequate street lighting. And they have to come
20 out and decide whether they are or they're not,
21 and what is adequate. So they want some sort of,
22 something they can hang their hat on and say,
23 well, how will we measure it and decide? This is
24 what's decided, determined as right, so we're
25 safe, you know. You can't come back and sue us

1 because we haven't provided enough.

2 But we didn't know. We need to know
3 what is enough. And they want something simple.

4 CEC PROJECT LEAD FLAMM: Thank you.

5 Okay, I'd like to move on to the last
6 segment, and this is what we're calling Others,
7 and those are the topics that are dear to you and
8 we haven't included on our agenda.

9 Just so I can allot some time, by a show
10 of hands, how many people want to make another
11 presentation? Okay. Well, we've got all night.

12 (Laughter.)

13 CEC PROJECT LEAD FLAMM: Five minutes
14 each, and then we'll have discussion, okay?

15 Cheryl, would you like to go first?

16 NEMA REP ENGLISH: My comments are brief
17 and they're really more procedural. When SB5X was
18 first passed, my company, along with Gardco and
19 NEMA, met with CEC staff to discuss the procedure
20 that would be used in this. And at that time
21 there was a discussion of an advisory group to
22 oversee and be a source of input for the
23 contractors on the project.

24 I think that that is a very positive
25 approach. I think that it added a great deal to

1 the advanced lighting guideline development, and I
2 would highly encourage CEC to consider designating
3 an advisory group to oversee these activities.

4 I think that that input process also
5 will help in the public review process, because
6 what we end up with as drafts will be much more
7 acceptable.

8 CEC PROJECT LEAD FLAMM: Okay, thank
9 you.

10 Anybody have any -- project team have
11 any comments?

12 Okay, thank you. That's a good comment.

13 Chad?

14 SPEAKER MOORE: Chad Moore, I'm a
15 scientist for the National Park Service, and I
16 bring to you today more of a perspective than a
17 suggestion.

18 The National Park Service, of course,
19 supports the CEC's efforts to reduce energy
20 consumption by the creation of better outdoor
21 lighting standards. This will result in less air
22 pollution and less nighttime light pollution.

23 The National Park Service has always
24 been concerned about air pollution. Park Service,
25 along with other federal and state agencies,

1 manage several Class I air sheds in California.

2 These Class I areas are assigned the greatest
3 protection under the Clean Air Act.

4 The issue of light pollution is more
5 recent, however. The National Parks provide
6 opportunities for recreation, respite and renewal
7 for Californians and the rest of the nation.
8 Increasingly, the view of a dark and starry night
9 sky is an integral component to this visitor
10 experience.

11 Recently the National Park Service
12 implemented a small research project to quantify
13 light pollution visible from several national
14 parks in California and the west. The preliminary
15 results are truly astonishing. Large cities, such
16 as Los Angeles and San Jose, affect night skies
17 over 200 miles away.

18 This effect has been precisely measured
19 as well. There are precious few dark night skies
20 remaining. This pervasive sky glow above
21 California is a testament to wasted energy, and in
22 this way the CEC and the NPS have an overlap in
23 their mission. If lighting was 100-percent
24 efficiency and appropriate, there would be
25 negligible light pollution. The reduction in

1 light pollution is, therefore, one of many
2 quantifications or measures of how well this
3 Commission and SB5X are accomplishing its task.

4 The National Park Service supports the
5 effort to extend Title 24 to outdoor lighting.
6 Furthermore, we encourage the CEC to provide
7 standards, guidance and leadership to cities and
8 other government bodies not covered by these
9 standards. The Commission should consider
10 environmental zones around state and national
11 parks and refuges.

12 Additionally, flexibility should be
13 allowed for parks and communities in partnership
14 to seek more stringent lighting standards, as has
15 been discussed, near sensitive areas where less
16 energy can be used to better accomplish lighting
17 needs while minimizing negative byproduct.

18 I'll take a step back from this a minute
19 and say that although the primary goal of SB5X is
20 energy conservation, there are other issues that
21 are inextricably linked. We've talked a lot about
22 safety today. Safety is only mentioned in the law
23 in reference to CALTRANS right of ways, yet it's
24 pervasive in everything we've discussed here
25 today.

1 We've also discussed aesthetics and
2 vanity issues, such as lighting the sides of
3 buildings. Certainly, when we have such
4 coincidence missions, the idea of environmental
5 conservation can be incorporated into these
6 efforts.

7 Parks are not just an environmental
8 issue. When people come to parks or people stand
9 in their back yard to view the stars, this is a
10 use. This is an outdoor lighting application.
11 Earlier we heard today that past efforts have been
12 linked to actual uses. Well, this is one of them.
13 The difference is that it is -- it requires a
14 maximum prescription versus a minimum
15 prescription. Instead of requesting light levels
16 that are 1,000 to 5,000 times brighter than the
17 full moon on, for example, a car lot, we're
18 talking about light levels that are ten to a
19 hundred to 500 times dimmer than full moon. It is
20 no different, it is a photometric equation.

21 Thank you for your time.

22 CEC PROJECT LEAD FLAMM: Thank you.

23 Jack? And, by the way, Jack brought in
24 some document today. I had it copied and copies
25 of it are on the back table. Many of you who

1 picked up things this morning may not have picked
2 up Jack's document.

3 SPEAKER SALES: I don't know how to
4 follow Chad.

5 Basically, I'm here to say I highly
6 support the efforts of the team and all of what
7 they are doing and to reflect that from the IDA.
8 And certainly, I already made a point of highly
9 supporting the billboard issue.

10 So there has been enough discussion
11 about cutoff and those kinds of issues, and I
12 think we're in good hands along those lines,
13 although, once again, I would say that we're
14 certainly concerned about shielding and cutoff.
15 In fact, I'm glad to hear the word Gardco used
16 here. I would hope that Gardco would become a
17 member of the team, since, as I understand, they
18 were the premier lighting manufacturer that first
19 introduced cutoff lighting, or at least a lot of
20 it.

21 So, with that, thank you.

22 CEC PROJECT LEAD FLAMM: Thank you,
23 Jack.

24 Against the back wall? That's you.
25 Yes, please. The back glass, thank you.

1 SPEAKER POSSELT: I didn't know I had my
2 back up against the wall. Stuart Posselt with the
3 Building Standards Commission.

4 I'd like to raise an issue here that
5 we're making kind of a quantum leap. Title 24 is
6 the California Code of Regulations Building
7 Standards Code. It consists of 11 parts in the
8 Building Code, the Mechanical Code, the Plumbing
9 Code, the Electrical Code, etc., including the
10 Energy Code. But it's primarily building
11 standards. We don't address the width of
12 driveways, the thickness of sidewalks or the
13 lighting levels on highways or freeways.

14 So the article that I delivered earlier
15 regarding the lighting levels at walks and parks,
16 parking lots of the California State Universities
17 is an anomaly. It's addressing, it's requiring
18 Title 24 to address something which is not in the
19 building. It's beyond the building, it's out in
20 the landscaped areas, the billboards, it's the
21 lighting in the parking lot and so on, which is
22 not normally done in Title 24.

23 So whether 5X requires the placement of
24 these standards in Title 24 I'm not sure, but if
25 it does not, I would suggest maybe looking at

1 another location for these standards, because of
2 the confinement of Title 24. Title 24 evolved
3 from originally the energy standards, the old
4 Title 24, the peatenbloss (phonetic) of the
5 buildings. It's the whole Building Code now, all
6 these 11 parts.

7 If you're going to do it into Title 24,
8 I would ask that you address the Title 24 code
9 cycles. We publish the code triennially. We're
10 about to release the 2001 code and 2002. And then
11 it's effective 180 days later. That 180 days
12 gives everybody a chance to learn and understand
13 and incorporate the new requirements in buildings
14 that are in the process of being designed, so that
15 when they come on for a plan check, they meet
16 those new requirements at that date.

17 It also gives the building officials and
18 the engineers and architects, who I happen to be
19 one of, an opportunity to learn and understand
20 what the new standards are. So I would urge you
21 to work within that code cycle. The next Title 24
22 publication will be in the 2004 cycle, although we
23 do annual amendments.

24 Please keep the standards easily
25 understood -- there is a lot of new terminology --

1 easily understood for not only those consultants
2 who are in the business but the building officials
3 who have to enforce them and the building
4 designers and architects who have to try to deal
5 with them so that they can do it. If there is any
6 ambiguity in there, it's just a banquet table for
7 attorneys. And when you get into a liability
8 situation, it was mentioned earlier, you place not
9 only the cities and counties in liability
10 situations but also the property owners in that
11 situation, and that just causes the liability
12 insurance costs to skyrocket.

13 So I ask that you also consider that in
14 whatever standards you adopt. Thank you.

15 CEC STAFF PENNINGTON: Stuart, I'd like
16 to discuss what you said a little bit.

17 SPEAKER POSSELT: Sure.

18 CEC STAFF PENNINGTON: We certainly will
19 be working in conjunction with the California
20 Building Code if, indeed, this is the appropriate
21 place to place these requirements. And the Energy
22 Commission intends to adopt our next update of
23 standards, including these standards, if this is
24 where we end up, in 2003, anticipating that they
25 would be included in the Building Standards

1 Commission's publication in 2004, and would become
2 effective in 2005.

3 So we sort of think the key dates are
4 when we adopt and when they go into effect. So
5 that's why we're sort of talking about those
6 dates, and we don't mean to be confusing about
7 appearing to be off cycle with what the Building
8 Standards Commission is doing. It would go into
9 the year 2004 code changes.

10 If there is a more appropriate place to
11 place these requirements than Title 24, we would
12 really appreciate your advice on that. We do
13 envision the building official enforcing the
14 requirements, and we're not aware of any other
15 title that's logical that would engage the
16 building official as the enforcement agent. Maybe
17 there is, but we're not familiar with it.

18 SPEAKER POSSELT: As far as I know, the
19 only things the building official does enforce is
20 Title 24.

21 CEC STAFF PENNINGTON: Right, so --

22 SPEAKER POSSELT: I don't know of any
23 other --

24 CEC STAFF PENNINGTON: -- we sort of
25 landed there by default.

1 SPEAKER POSSELT: Well --

2 CEC STAFF PENNINGTON: We also certainly
3 intend to establish lighting requirements for
4 unconditioned spaces, which we haven't done
5 before, as part of this --

6 SPEAKER POSSELT: That's a building
7 requirement.

8 CEC STAFF PENNINGTON: And that's a
9 building requirement.

10 SPEAKER POSSELT: It's a building
11 standard.

12 CEC STAFF PENNINGTON: So that would go
13 into Title 24, right?

14 SPEAKER POSSELT: Right.

15 CEC STAFF PENNINGTON: But getting
16 outside the building envelope, you know, we do
17 have some requirements that are lights affixed to
18 the exterior of a building, and those requirements
19 are in Title 24.

20 So this is just sort of a logical
21 extension, we think, into lighting that is
22 associated with the building and gets a building
23 permit, but is not in conditioned space. So it
24 seems like this is the logical place to put it,
25 but if the Building Standards Commission doesn't

1 think so, we would like to know right away --

2 SPEAKER POSSELT: I didn't say we didn't
3 think so, I just said to look at it carefully in
4 your process as you go through the development
5 process as to where this might best be placed. I
6 don't know, to tell you the truth. And we really
7 haven't discussed it, the staff really hasn't
8 discussed it.

9 CEC STAFF PENNINGTON: If this would be
10 an issue at the Building Standards Commission, we
11 would very much like to know early, so --

12 SPEAKER POSSELT: We did briefly touch
13 on it as being sort of a quantum leap of going
14 into the next generation.

15 CEC STAFF PENNINGTON: Right.

16 CONSULTANT HESCHONG: Aren't there a
17 number of situations where there are permits
18 required for construction activities, public work
19 activities which are outside of the physical
20 envelope of a building? Excavation,
21 electrification, seismic standards for
22 freestanding structures?

23 SPEAKER POSSELT: Well, seismic for
24 freestanding structure is a structure.

25 CONSULTANT HESCHONG: Right.

1 SPEAKER POSSELT: So that's a building.
2 A building is a structure. We don't get involved
3 in zoning issues, land use issues, things such as
4 that. That's where we sort of break the barrier.

5 CEC STAFF PENNINGTON: I guess fences of
6 certain types are within the Building Code as
7 well, right, so it's not exactly an enclosure --

8 SPEAKER POSSELT: Retainee's walls would
9 be, but the typical five-foot fence around your
10 back yard is not.

11 CEC STAFF PENNINGTON: But if it's six
12 feet, it is.

13 SPEAKER POSSELT: Probably, I don't
14 know.

15 CEC STAFF PENNINGTON: Right.

16 SPEAKER POSSELT: It's probably not
17 allowed, to begin with. Because that's a local
18 situation.

19 CEC STAFF PENNINGTON: Okay. My point
20 was that, along the lines of what Lisa was saying,
21 that it's not necessarily only structure, only
22 enclosures --

23 CONSULTANT HESCHONG: Occupied
24 structures.

25 CEC STAFF PENNINGTON: -- that are

1 regulated through Title 24.

2 SPEAKER POSSELT: It is a grey area, and
3 I think that perhaps we should carry on this
4 conversation further to take some, reach some sort
5 of resolution of it.

6 CEC STAFF PENNINGTON: Great.

7 SPEAKER POSSELT: But I just wanted to
8 raise the issue as a possibility.

9 CEC STAFF PENNINGTON: Yeah. As you can
10 imagine, the building officials are going to have
11 some anxiety about this new requirement, you know,
12 what they would view as an increase in their
13 responsibility, and they are obviously an
14 important constituent to the Building Standards
15 Commission --

16 SPEAKER POSSELT: Very much so.

17 CEC STAFF PENNINGTON: -- we'd like to
18 work with you related to that.

19 SPEAKER POSSELT: One of my concerns
20 that I expressed, I think, to you earlier was the
21 fact that arriving at these different zones,
22 you're creating a need for cities to develop
23 lighting zones within their own city, different
24 from zoning, land use zoning regulations.

25 And those are going to be continually

1 changing because this week it was 16th Street, and
2 then all of a sudden there's a Ford dealership
3 across the street, and that's going to change the
4 lighting levels and change the environmental zone
5 for the street, so that's got to be studied and
6 changed. And those issues are somewhat
7 subjective. But that's a whole other issue.

8 On the LEDs, as a closing comment, my
9 son has been deeply involved in the research and
10 development and now the marketing of LEDs, and
11 that's the Apple 2+ that's coming.

12 CEC PROJECT LEAD FLAMM: Thank you.

13 Pat?

14 SPEAKER SPLITT: Well, I'm going to lose
15 my voice soon, so you're in luck.

16 Well, it sort of falls on what we were
17 just talking about. It's my feeling that if you
18 pass these regulations and they go into the
19 Building Code, then if any municipalities, they
20 automatically adopt them. I mean, it's by code,
21 but they have the option of amending them and
22 coming up with their own regulations, as long as
23 they can show that they're at least as stringent
24 or more stringent, energy-wise, than our proposed
25 or whatever is the real regulation.

1 Which means they then have to submit
2 their proposed changes to the -- I'm not sure --
3 the building department or the Building
4 Commission, which would probably then bounce them
5 back to you guys to review.

6 CEC STAFF PENNINGTON: They come
7 directly to the Commission.

8 SPEAKER SPLITT: Okay, and there's a lot
9 of them around, and a lot of them are really
10 ridiculous. And it seems to me it might be better
11 off, since you know this is going to happen, to
12 try to do a -- send out a notice to all these
13 municipalities and let them know that you're
14 coming up with these rules that may supersede
15 those and ask them if they have any special
16 lighting ordinances to send you a copy now, so you
17 can sort of see what it is that they're concerned
18 about and sort of get a jump on things to, you
19 know, not get broadsided after you had thought
20 everything is okay.

21 There are some things I don't think you
22 can do anything about, like the outdoor money
23 machine. That's actually a statute, I think, that
24 regulates those lighting levels, even though
25 they're impossible to comply with. But that's a

1 regulation that I think is, even on freestanding
2 money machines, and it's enforced as far as I know
3 by the building official. Most of these are
4 enforced by the building official.

5 I have just a short example here. This
6 is from the Carmel-by-the-Sea municipal code under
7 duties of the building official, and there's a
8 section on lighting requirements. And it says,
9 for commercial buildings or zones, "All light
10 fixtures shall not be directed toward the public
11 right of way. Lighting intensity shall not exceed
12 eight candlefoot power at a point two feet beyond
13 the storefront windows, as measured in a vertical
14 or horizontal plane three feet above the ground or
15 public walking surface."

16 "Lighting intensity within the interior
17 of the store space shall not exceed 30 candlefoot
18 power at any point visible from the public right
19 of way, as measured in a vertical or horizontal
20 plane, three feet above the floor or walking
21 surface. I mean, I could go over, spend an hour
22 going through this, and a lot of you already know
23 how ridiculous it is.

24 But anyway --

25 CONSULTANT ELEY: Is this why you want

1 us to get all of these local ordinances?

2 (Laughter.)

3 SPEAKER SPLITT: Well, I mean, if
4 they -- you know, if you ask for -- I mean, this
5 is maybe just an extra bonus, but if you ask for
6 these things and they sent this to you, and it
7 wouldn't take anyone reviewing this very long to
8 tell them that it's totally unenforceable and
9 gibberish, and, you know, if they want to explain
10 to you what they really intended, you know, maybe
11 we could try to fit that into the regulations.
12 Otherwise --

13 Because people like me, we can't go
14 there and tell them that. Because they say if you
15 want a building permit, you do it. And they'll
16 say that, well, dozens of other lighting
17 professionals have done this, which are, you know,
18 electrical contractors who just signed a piece of
19 paper saying we meet these requirements, you know,
20 and have no idea what they are. And it's just
21 crazy.

22 And anyway, there are zillions of these
23 things, and they are going to come to you.
24 Because it will be a requirement once there is an
25 outdoor lighting regulation that they all have to

1 do this, or they'll just go in.

2 CONSULTANT HESCHONG: I'm not sure that
3 there would be a conflict, if they're controlling
4 things such as luminance or illuminance from a
5 particular site, whereas the Energy Commission is
6 controlling lighting power density. They may not
7 conflict, and you may be able to do both --

8 SPEAKER SPLITT: Well, the way a lot of
9 these are worded, if I wanted to put in some
10 lighting, I could pick whichever one I thought
11 gave me the most lighting. And in a lot of these,
12 I can show that I can meet -- you know, since
13 obviously nobody in this building department
14 understands at all what this thing means. I can
15 show that I meet their requirement.

16 And they may indeed just say, well,
17 that's okay, you can put it in. Because our
18 requirement takes precedence over those guys in
19 Sacramento. Because this is a local thing and
20 it's more important to us.

21 CEC PROJECT LEAD FLAMM: I want to ask a
22 question, and maybe Bill can help clarify this.

23 If there was a standard that's more
24 strict than ours, wouldn't there really be a non-
25 issue, because by default they'd meet ours?

1 CEC STAFF PENNINGTON: Yeah, I think
2 what Pat is suggesting is that the local
3 government might -- you might comply with the
4 local government and not comply with ours, and the
5 local government might say that they're just the
6 relevant one, so --

7 SPEAKER SPLITT: The problem with this
8 is that, to begin with, they're calling out for
9 this measurement of candlefoot power, which
10 doesn't exist. So somebody has to somehow make up
11 something that they think meets this requirement.
12 And obviously, they've been doing it for years. I
13 mean, this has been on the -- this is probably 15
14 years, at least. And people have been
15 demonstrating that they meet this eight candlefoot
16 power thing that is meaningless.

17 So somehow they have come up with some
18 equivalent something that means eight candlefoot
19 power, which may be a lot more than the lighting
20 that you're saying is the limit. So we don't
21 really know what it -- There's something that
22 they're basing this on, and it can't be candlefoot
23 power.

24 CONSULTANT ELEY: Well, we don't
25 anticipate writing a standard on footcandles or

1 candlefoot power. And I think Lisa hit it. I
2 mean, if what they require -- I don't see a
3 conflict here, really, because I think you can
4 meet both standards. And they're different
5 things.

6 One of them is brightness or luminance,
7 and the other one is power in our case, or energy,
8 when you factor in controls.

9 SPEAKER SPLITT: Well, but I don't know
10 what they all are. So I'm just saying there may
11 be some that will be a conflict, and rather than
12 wait until you've made the rule official and then
13 have these things start coming through and then
14 find out you've got the problem, why not try to
15 find out what's out there beforehand, in case
16 there is a conflict, so you know about it.

17 CEC STAFF SHIRAKH: Well, most of these
18 ordinances are on the Internet. So I know we can
19 easily look at -- and we know which cities and
20 counties in the state have ordinances. In fact, I
21 think the Dark Sky web site has a list of all the
22 ordinances in the state, so we can take a look at
23 them and try to identify any potential conflicts.

24 CONSULTANT HESCHONG: Well, we don't
25 know that that list is exhaustive, and so I think

1 Pat's point that there may be others --

2 CEC STAFF SHIRAKH: But Jack Sales can't
3 tell us whether it's exhaustive or not.

4 (Laughter.)

5 SPEAKER SPLITT: So I don't -- There may
6 not be a problem, but I just don't think we know
7 whether there's a problem there.

8 SPEAKER SALES: When people ask us about
9 outdoor lighting ordinances at the IDA office --
10 and I can tell you, we get at least one to two
11 calls a day from cities and counties across the
12 United States and around the world about outdoor
13 lighting ordinances -- we don't know how many
14 ordinances are out there. We don't know how many
15 city codes and how many planning documents there
16 are out there.

17 We try to collect as many as we can, and
18 if you have some that we don't have on our web
19 site, I'd appreciate having them, because we're
20 trying to put all of them up there that we can.
21 And I'd like to also address that issue from our
22 perspective, in that this process we feel is going
23 to help with that and set a baseline better, as
24 well as the fact that we recognize that there are
25 all of these laws out there or city ordinances

1 that are so bad. There are many of them that are
2 just terrible.

3 And you cite one in particular, and it's
4 probably based on the California ATM law, but
5 we're in an effort right now to develop some
6 better model lighting ordinances. That is an
7 important project for us, because we get so many
8 calls, and we want to get them all to something
9 better, instead of everybody doing their own thing
10 and most of it not being anything about lighting,
11 from a lighting designer's perspective.

12 CEC PROJECT LEAD FLAMM: Stuart?

13 CONSULTANT HESCHONG: And I have a
14 response to something Stuart said.

15 SPEAKER POSSELT: I think I can add a
16 little something to the question of local
17 ordinances, if you put it in Title 24. And the
18 only reason that you can amend Title 24 is a, it
19 has to be more strict; and b, you have to have
20 findings of climate, topography, or geology. You
21 must then make those findings, the city or county
22 or city and county must make those findings then
23 and then adopt the ordinance and file those with
24 the Building Standards Commission.

25 We make sure that there are findings and

1 that the ordinance was duly adopted, and then we
2 file it. We're a warehouse. We don't send it to
3 anybody else for approval or examination.

4 If they don't file it with us, it's
5 unenforceable.

6 CEC STAFF PENNINGTON: Stuart, we have
7 separate requirements in part one that relate to
8 local ordinances that are related to energy, and
9 those are required to be approved by the Energy
10 Commission. And it's not obvious that all local
11 ordinances that are energy related come to the
12 Energy Commission, but we --

13 SPEAKER POSSELT: Or us.

14 CEC STAFF PENNINGTON: Or you, for that
15 matter. But we certainly have seen some and we've
16 approved some.

17 SPEAKER POSSELT: Well, we don't approve
18 or disapprove, we just make sure that they went
19 through the process. And then if somebody wants
20 to find out about them, they're welcome to come
21 and look at our file cabinet.

22 CEC STAFF PENNINGTON: Right.

23 SPEAKER POSSELT: And it must be done
24 every three years or every triennial cycle. The
25 ordinances and changes that were -- and amendments

1 that were adopted for the '95 cycle of the
2 California Building Standards Code do not affect
3 the '98, and those for the '98 will not affect the
4 2001. They have to be readopted by the local
5 agencies.

6 CEC PROJECT LEAD FLAMM: Lisa?

7 CONSULTANT HESCHONG: I have two things
8 I want to contribute to Stuart's discussion here.

9 One was you said earlier that this issue
10 of creating separate lighting zones, which may be
11 independent of building zoning, the intent is that
12 they would not be different, that lighting zones
13 will be attached to existing territory
14 descriptions so that there is not a whole new
15 zoning structure that's being created on top of
16 what's existing, or it's not adding additional
17 burden beyond what's existing there. So that's
18 one point.

19 The other is that the hope with creating
20 these lighting zones is that it will provide an
21 easy and consistent way for local jurisdictions
22 who want to increase the stringency, so that they
23 can simply lower the lighting zone -- go from a
24 three to a two -- they will increase the effective
25 stringency at a local level without changing the

1 pattern and going to rather odd sets of
2 requirements that may not fit in.

3 SPEAKER POSSELT: Good, thanks.

4 CEC PROJECT LEAD FLAMM: Thank you.

5 Other comments? Rick?

6 SPEAKER MILLER: Rick Miller with HOK.

7 The California Energy Commission has
8 been a big sponsor of NCQLP, National
9 Qualifications for Lighting Professionals, to get
10 lighting professionals examined and set to a
11 certain level of professionalism and knowledge,
12 and that's through the LC process.

13 I would see it as certainly beneficial
14 if the Energy Commission would recognize LCs as a
15 party who is legally able to sign for the lighting
16 certifications submitted with building plans.

17 CEC STAFF SHIRAKH: We've discussed this
18 topic, and basically what it involves is a change
19 in legislation, basically. I think this comes
20 under the purview of a California professional
21 code, and I'm not really exactly sure of what --

22 CEC STAFF PENNINGTON: Business and
23 Professional.

24 CEC STAFF SHIRAKH: Business, yeah,
25 which is administered by the Department of

1 Consumer Affairs, and they determine who can
2 practice what, if it's not the Energy Commission.
3 And their mandate is through legislation.

4 So, this has come up more than once
5 before, and each time we researched it, we came up
6 with the same answer that what it would take is
7 basically a new legislation that would allow other
8 people to practice this and be able to sign off on
9 lighting.

10 SPEAKER MILLER: The way I see the
11 current authorization is that a licensed architect
12 can sign it, the licensed engineer, a businessman,
13 electrical contractor, and it doesn't mean an
14 electrical contractor is qualified in lighting.
15 The lighting professional who has studied it,
16 passed an examination to show competency, unless
17 that person is also a licensed architect or a
18 licensed engineer, he's not able to sign it, which
19 seems not consistent with the goals of this
20 Commission.

21 So maybe the industry should pursue the
22 Consumer Affairs group to get LCs legally
23 qualified to sign.

24 CEC STAFF SHIRAKH: You know, and that's
25 exactly, in fact, I think it was about a year,

1 year and a half ago, interior designers' attempt
2 at changing legislation. And it didn't get very
3 far. I think it passed one or other of the House
4 of the Assembly or the Senate, but it did not
5 become the law.

6 So, you know, that's the vehicle to do
7 it. How easy it is, I don't know. You know, I
8 think somebody needs to try and find out. But it
9 is a good idea, to have LCs, and we fundamentally
10 approve.

11 CEC PROJECT LEAD FLAMM: Pat?

12 SPEAKER SPLITT: Pat Splitt from
13 APP-TECH.

14 Several years ago, quite a few years
15 ago, actually, the Energy Consultants Group was
16 trying to do just this, get themselves somehow
17 officially recognized, and it was impossible.

18 It just seems like the Legislature was
19 just opposed to adding any more layers of -- they
20 were trying to go in the other direction and get
21 people out of having to have special
22 certifications, rather than more. So it's just
23 180 degrees opposed to their direction.

24 CEC STAFF SHIRAKH: And I think the
25 interior designers found that out last year when

1 they attempted. They didn't get very far.

2 CEC PROJECT LEAD FLAMM: Any other
3 comments?

4 Well, I thank everybody for coming to
5 this, and if anybody is still hanging out there on
6 the webcast, thank you for participating. And if
7 there are any comments that -- any perspectives
8 that weren't presented, you're welcome to send an
9 e-mail to myself or Mazi.

10 And I'd like to adjourn this meeting.
11 Thank you.

12 (Thereupon, the hearing
13 was adjourned.)

14 --oOo--

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter,
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